THE *Soybean Digest*

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HUDSON, IOWA

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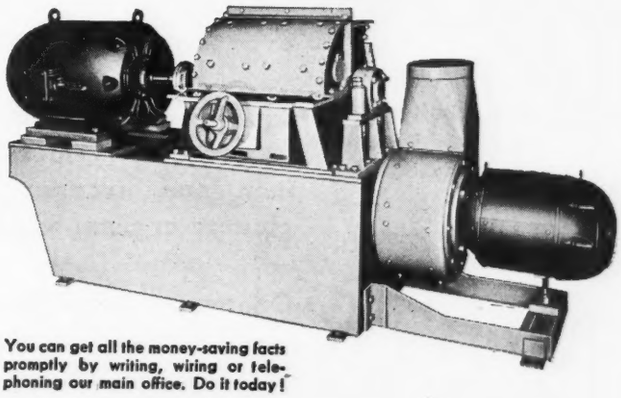

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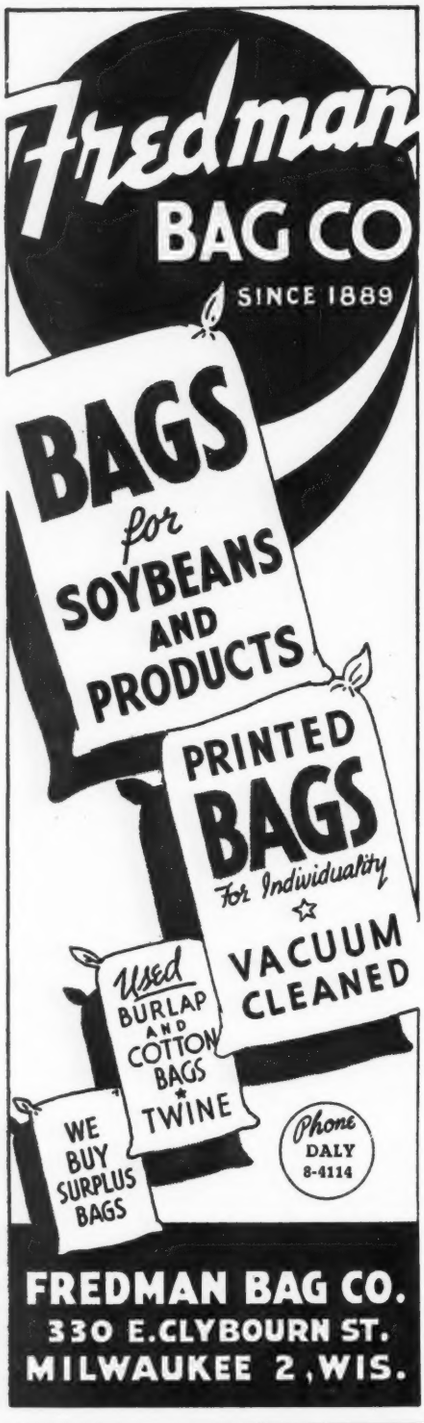

GROWERS

Fertilizers Up Yields

Higher soybean yields in North Carolina depend on the use of lime and fertilizers as well as the planting of adapted varieties.

This is shown by tests in recent years by W. L. Nelson and E. E. Hartwig of the North Carolina Experiment Station. Nine tests were set up in 1946 to show the importance of these practices, in farmers' fields in Pasquotank, Beaufort, Jones, Duplin, Edgecombe and Halifax Counties, N. C.

The results indicate the need of lime and fertilizer very clearly. With the Ogden variety for example, an average of all the tests showed the following yields per acre: check 22 bu.; lime alone 25 bu.; 400 lbs. 0-10-20, 27 bu.; lime plus 400 lbs. 0-10-20, 34 bu. It is evident that the addition of lime or fertilizer is not sufficient.

Soils now producing very low yields can be made to produce well, say Nelson and Hartwig. In an experiment in Edgecombe County on a Norfolk soil very low in plant nutrients the Ogden variety yielded 5 bushels per acre with no fertilizer or lime. But with lime and 400 pounds of 0-10-20 the yield was 32 bushels. The quality of the beans was also much improved by the lime and fertilizers.

In an experiment in Pasquotank County a yield of 42 bushels was obtained for the Ogden variety with no lime or fertilizer. Ordinarily it would be thought that with a yield such as this no additional nutrients would be needed. When 1 ton of lime and 400 pounds of 0-10-20 per acre was applied, the yield was 48 bushels per acre!

Leading U. S. Counties

Twenty-nine U. S. counties produced a million or more bushels of soybeans in 1947, according to a county-by-county report for the 18 principal soybean-producing states for 1946 and 1947, issued by the Bureau of Agricultural Economics of the U. S. Department of Agriculture.

Twenty-one of the counties producing a million or more bushels of soybeans in 1947 were located in Illinois, still handily the nation's leading soybean state. Illinois' 1947 production totaled 65.1 million bushels compared to that of Iowa, in second place with 26.3 million bushels.

Three Minnesota counties produced 1 million bushels of soybeans in 1947; Missouri had two counties, and Arkansas, Ohio and Iowa each one.

Champaign county, Ill., was still the nation's leading soybean county with 2.9 million bushels in 1947. Vermilion was back in second place with 2.7 million bushels.

The nation's 10 leading soybean producing counties in 1947, all of them in Illinois, were:

	Million bu.		Million bu.
Champaign	2.9	Macon	1.76
Vermilion	2.7	Edgar	1.71
Christian	2.3	Macoupin	1.713
Sangamon	2.04	McLean	1.6
Iroquois	2.03	Montgomery	1.57

New Madrid County, Mo., was 11th with 1.55 million bushels in 1947.

Beans in Illinois

Soybeans averaged 5.5 bushels per acre less in 1947 than in 1946 in the state of Illinois, reports the Illinois Crop Reporting Service in *Illinois Crop and Livestock Statistics*.

State per acre average was 18 bushels in 1947; 23.5 in 1946. Total Illinois production in 1947 was 65,196,000 bushels compared with 78,020,000 in 1946.

Champaign still stands at the top of Illinois counties to lead the nation in soybean production—with 2,940,000 bushels produced on its farms in 1947. Vermilion County was second with 2,715,300 bushels, and Christian County third with 2,397,600.

Two other counties with over 2 million bushels production were Iroquois with 2,038,000, and Sangamon with 2,040,600. Champaign and Christian counties both produced over 3 million bushels of soybeans in 1946.

Twenty-one Illinois counties produced over 1 million bushels of soybeans in 1947.

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—Soybean Digest Photo

You see E. E. Eversole in a field of his Lincoln soybeans near Hindsboro, Ill. Mr. Eversole, a hardware and implement merchant at Hindsboro, farms 600 acres, 200 of them in Lincoln soybeans. He has been farming for 20 years and has seen the soybean crop move strongly to the front in that time. The picture was taken August 18. At that time Mr. Eversole guessed the field might go 25 to 30 bushels per acre. Most farmers in the territory now grow Lincolns.

Mixes Corn and Soys

Corn which shared space with soybeans outyielded that in regular planting in Illinois tests, reports *Capper's Farmer.*

"Corn and soybeans were planted two rows alternately in unfertilized plots at Illinois Agricultural Experiment Station," an article in the August issue of the farm magazine points out. "Corn yield was 50 percent more than from corn in continuous rows.

"A. L. Lang, Illinois soils man, isn't ready to say just why the corn turned out more grain to the row when planted with beans. It may be because the corn got more light. Also, it may have benefited from more air circulation and less competition for moisture and plant food.

"The Illinois station didn't have an experimental field of continuous rows of soybeans for a direct comparison with yields of the beans in corn. However, George Babb, owner of the Champaign County farm where the plots were planted, said the beans in the corn set 50 percent more pods than those in another field on the same farm.

"Lang isn't recommending the mixed planting method on the basis of 1 year's tests. But he thinks it may have possibilities for farmers who grow corn and beans.

"Harvesting the mixed planting with today's machinery is a problem," the article points out. "Present 2-row pickers will handle the corn satisfactorily in a 2-and-2 planting, but the gathering of the bean crop isn't so easy. Lang is going to try various row combinations. If the system will bring higher yields, he thinks the engineers and machinery companies will take care of the harvesting problems."

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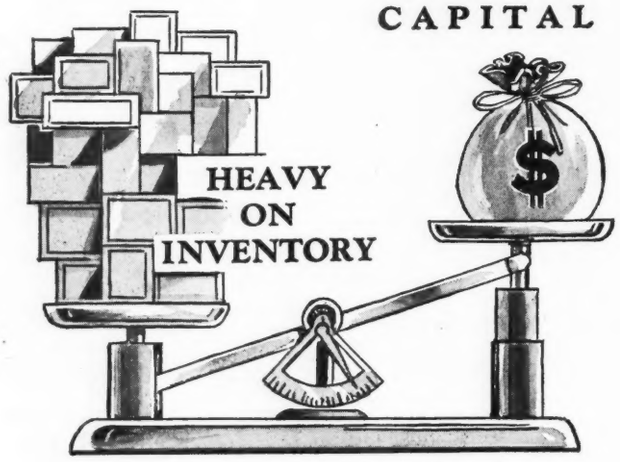

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AS THE PRESS SEES IT

ASA Program

For some time the soybean, newest great agricultural crop in this country, has been asking wheat, the oldest, to move over and make more room for it in the human and animal stomach. Wheat, or some other occupant of these stomachs, must actually have moved over, for the soybean crop has grown in acreage faster than any other commercial farm crop in history.

Now the soybean aspires to even a greater place in the nutritional sun. U. S. producers are being asked to invest one-fifth of a cent a bushel from the returns of their 1948 soybean crop in a nationwide educational, promotional and legislative program which is expected to add much to the success already achieved along this line by the American Soybean Association.

It is too bad, of course, that stomachs are not bigger or that they are incapable of stretching beyond a certain point. And it is too bad, also, that estimable foods must therefore compete vigorously for the limited stomach space available. But this is one of the facts of life, and since a new food can gain access to the desired part of the anatomy only through dislodging from that place some other food, competition is inevitable. It is, in fact, desirable, and in the best interest of the anatomy.

Such philosophic reflections came, naturally, into the minds of the wise leaders of the breadstuffs industries who brought to an end the reluctance and procrastination of generations of millers and bakers. It is greatly to the credit of the soybean that it learned one of the great facts of life before it was out of the cradle. —*Northwestern Miller.*

Remedy at Hand

Housewives in Illinois are reading tantalizing advertisements in the national magazines these days. They are advertisements for margarine that is "yellow—ready to serve." It is "now available in these 26 states," the ads say, and then they list the 26, and Illinois is not among them.

The ads point up to Illinois housewives the fact that it is not the failure of the United States Senate to act on the margarine tax that is keeping them from buying their margarine already colored. It is the antiquated laws of Illinois, which positively forbid the sale of colored margarine in this state.

Nor are the housewives of Illinois less tantalized when they read of the recent discovery that sale of colored margarine is not illegal in Missouri and of the repeal of a state law that formerly outlawed yellow margarine in Massachusetts.

—*Decatur, Ill., Herald.*

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Almost 1,000 people from 28 states and 9 other countries attended the 3-day sessions of the 28th annual convention of the American Soybean Association which closed at Memphis September 15. The meetings, which included the field trip into the Delta section of Arkansas, were undoubtedly among the best attended and most successful in the entire history of the Association.

The efforts of several groups beside the Association committees and staff contributed greatly to the success of this meeting held in one of the world's great cotton centers. These included the Memphis Merchants Exchange, the Clarkedale Experiment Station, and Lee Wilson & Co.

Members of the convention committee of the Memphis Merchants Exchange had literally put in months of effort in preparing a rousing welcome for the convention attendants; and their efforts paid off. Wives of Exchange members were in charge of ladies hospitality. The Exchange was host at a cocktail party which preceded the annual banquet.

The staff of the Clarkedale station had been busy in preparing the test plots for the field trip, which included all named commercial varieties in the U. S. for inspection of convention visitors, and the preparation of the plots for demonstrations of flame weeding, artificial defoliation and mechanical cotton picking.

The Lee Wilson & Co. people under the able generalship of Manager J. H. Crain had likewise gone allout to make the visit to the world's largest cotton plantation and one of the world's largest agricultural enterprises a memorable occasion. A large number in addition to those registered at the convention attended the tour of the plantation, which was in charge of Glen (Bud) Green, Wilson public relations man. About 800 were fed at the barbeque lunch put on by Wilson's at Bassett Park.

The Memphis Merchants Exchange and Lee Wilson & Co. each published a well printed and liberally illustrated book in honor of the occasion.

Ersel Walley, Walley Agricultural Service, Fort Wayne, Ind., was reelected president of the Association. Geo. M. Strayer, Strayer Seed Farms, Hudson, Iowa, was reelected secretary-treasurer.

John W. Evans, Montevideo, Minn., was elected vice president, succeeding W. G. Weigle, Marsh Foundation Farm, Van Wert, Ohio.

Newly elected directors were Leroy Pike, Pontiac, Ill., succeeding Walter W. McLaughlin, McLaughlin Agricultural Service, Decatur, Ill.; and O. H. Acom, Little River Farms, Wardell, Mo., succeeding Harry A. Plattner, Malta Bend, Mo.

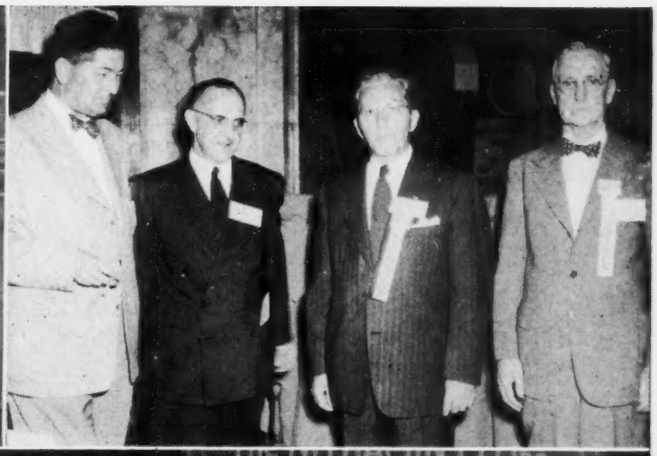
Strayer, Weigle and G. G. McIlroy, Farm Management, Inc., Irwin, Ohio, were reelected directors.

Holdover directors include: Walley, Evans; J. B. Edmondson, Danville, Ind.; Howard L. Roach, Plainfield, Iowa; Jacob Hartz, Sr., Stuttgart, Ark.; John P. Dries, Saukville, Wis.; F. S. Garwood, Stonington, Ill.; and R. H. Peck, River Canard, Ontario.

The Association went on record favoring immediate announcement by the government of allocation of a "reasonable amount" of whole soybeans for shipment abroad to bolster the price of 1948-crop beans before the bulk of the crop begins to move.

The Association pointed out that the 1948 crop is estimated to be the largest in history, and the adopted resolution stated that exportation of soybeans would stabilize the

The new ASA board of directors—the men who will serve you during 1948-49. Standing left to right: R. H. Peck, John W. Evans, John Dries, Howard Roach, G. G. McIlroy, W. G. Weigle and Frank S. Garwood. Seated: J. B. Edmondson, O. H. Acom, President Ersel Walley, Secretary-treasurer Geo. M. Strayer, and Jacob Hartz, Sr. Leroy Pike is not in the picture. —Woodard's Photographers



AT THE CONVENTION

On this page you see just a few of the people who attended the 28th convention at Hotel Peabody. Top left, examining a soybean plant, Geo. U. Shelby, Charleston, Mo., grower; W. E. Tidwell, Columbus, Miss., seed dealer and handler; John Gray, Louisiana State University agronomist; and John A. Hendrix, Northeast Louisiana Experiment Station, St. Joseph, La.

Top right, visiting in a booth, N. H. Pace, dealer and exporter of soybeans, Cleveland, Miss.; ASA President Ersel Walley, Walley Agricultural Service, Fort Wayne, Ind.; A. A. Williams, Happy Mills, and J. M. Trenholm, Standard Commission Co., Memphis. Williams and Trenholm were members of the convention committee of the Memphis Merchants Exchange.

In picture second from top, three Tallulah, La., growers compare two varieties of soybeans. They are: Walter M. Scott, Sr., Walter M. Scott, Jr. and W. S. Patrick. The senior Scott was a program speaker.

Second from bottom, four Illinois elevator men compare notes: Frank Garwood, president Stonington Cooperative Grain Co., and Irwin W. Larrick, manager; Elmer T. Frobish, manager of the Morrisonville Farmers Co-op Co.; and C. G. Simcox, manager Assumption Cooperative Grain Co.

Bottom left, S. S. De of India and Massachusetts Institute of Technology and Florence Rose, executive secretary for Meals for Millions, find they have much in common in their concern for better diets for the world's hungry.

Bottom right, three Canadians confer in corridor: Ivan Roberts, Guelph; R. H. Peck, River Canard grower and member of ASA board; and J. V. Ross, Victory Mills, Ltd., Toronto.

All pictures read from left to right. Photos by Soybean Digest.

Barges in tow on the Mississippi. These lines now bring millions of bushels of grain and soybeans to the port of Memphis for distribution throughout the South.

market and encourage growers to maintain an acreage large enough to meet future U. S. and foreign demand.

The Association asked strong producer backing in soybean-growing areas for its promotional program announced this summer. The program is being financed by grower contributions of one-fifth cent per bushel collected by elevators on 1948-crop soybeans at the time of harvest.

The Association also went on record on the butter-margarine issue by demanding repeal of "all regulatory taxes and controls—local, state or federal—which discriminate against the use of edible products made from domestic oils."

The usual informal smoker was held the evening preceding opening of the convention, and was presided over by Secretary-treasurer Geo. M. Strayer.

Two films, *Progress in Products*, the margarine film produced jointly by the American Soybean Association and the National Cotton Council, and the Allis-Chalmers film, *The Soybean Story*, were shown.

Contributing greatly to the good fellowship so evident at the 28th convention was Joe Seabold, McMillen Feed Mills, Inc., Napoleon, Ohio, our song leader again this year. Seabold led off all sessions.

Five hundred and fifty-five people bought tickets to the annual banquet and took part in the group singing led by Joe Seabold, McMillen Feed Co., Napoleon, Ohio; saw the presentation of lifetime memberships to the men elected this year; and heard Clayton Rand's humorous talk, "Jack and the Beanstalk." Robert Snowden, Horseshoe Plantation, Hughes, Ark., was toastmaster. A feature of the banquet was "Stake-lets," a soy product of Madison Foods.

Over 100 women attended the convention —a new record. They were guests at a noon luncheon tendered by the Interstate Bag Co., a Wilson & Co., enterprise at Wilson, Ark. All ladies attending the banquet were presented with corsages by Memphis Merchants Exchange.

Exhibit booths of firms serving the industry received many visitors during the convention. They offered a good cross-section of services offered to the industry and were a center of much interest.

The following men were members of convention committees:

Nominations committee: Howard L. Roach, Plainfield, Iowa, chairman; Jacob Hartz, Sr., Stuttgart, Ark.; David G. Wing, Mechanicsburg, Ohio; Dr. W. L. Burlison, Urbana, Ill.; John Dries, Saukville, Wis.

Awards committee: W. G. Weigle, Van Wert, Ohio, chairman; J. B. Edmondson, Clayton, Ind.; J. W. Calland, Decatur, Ind.; J. C. Hackleman, Urbana, Ill.; W. J. Morse, Beltsville, Md.

Resolutions committee: J. B. Edmondson, Danville, Ind., chairman; K. E. Beeson, Lafayette, Ind.; W. G. Weigle, Van Wert, Ohio; George Hale, Burdette, Ark.; John Evans, Montevideo, Minn.; John Sand, Marcus, Iowa; Paul Hughes, Hudson, Iowa.

Annual Report of the President

At our last annual meeting your board of directors and officers were committed to a policy of aggressively promoting the business interests of the American soybean grower. Unanticipated activity and progress in that direction can be reported.

In connection with the campaign to remove the federal taxes on margarine made from domestic oils, the American Soybean Association became nationally known. It found strength which comes from its own membership and from cooperation with those having common interests, such as the Cotton Council.

All of this was accomplished without adequate finances but placed a great burden and expenditure of donated time upon the directors and many of our stalwart members. The year closing witnessed the completion of the film *Progress in Products* and the name of the American Soybean Association is being identified as a friend of the food consumer everywhere—a fine piece of public relations in these times.

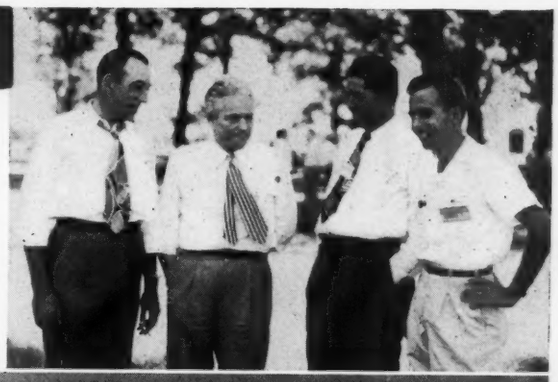
Excellent progress has been made in the expansion of our field service and the initiation of a sound financing plan. These new developments have not diminished our interest in or our recognition of the importance of the technical side of soybean growing and utilization. We have cooperated in every way with every agency and have publicly expressed our appreciation of the fine work being performed in the field of agronomy by the National Soybean Processors Association.

As we look ahead we must emphasize the fact that "soybeans are worth more money." What an opportunity for sales promotion when you have a product a bushel of which contains three times as much protein, ten times as much fat, and nearly three times as much valuable minerals as a bushel of wheat. Certainly such a product is worth twice as much. Remember, too, that a bushel of our product contains four times as much protein, over four times as much fat, and nearly four times as much mineral as a bushel of corn, and certainly one bushel of it should be worth three or four times that of a bushel of corn. Our problem is to convert that value into price.

It is a hard business fact that processors and handlers are primarily interested in an adequate and profitable service charge or handling profit. Only the consumer and grower are primarily interested in price. The consumer can and will pay a good price only if the soybean is utilized in high value usage. It is imperative that with adequate financing our Association in faithfulness to its trust to our grower membership, alone if necessary, but cooperating with all those who will, make every possible effort to divert the soybean to its most profitable utilization.

Every cent added to the price of soybeans by our efforts means 1½ million dollars to our growers. Certainly with such large stakes at issue they are entitled to our best efforts. May I repeat a statement previously made that "When the chips are down, price will determine how many bushels of soybeans

FIELD DAY AT CLARKEDALE AND WILSON



Cameras were much in evidence on the ASA field trip to Clarkedale and the Wilson plantations. At right you see four seedsmen talking it over at Bassett Park following the barbeque given by Lee Wilson & Co. Left to right: M. E. Magee, Magee Grain Co., Dyersburg, Tenn.; Lyman Reed, Missouri Soybean Co., Caruthersville, Mo.; N. H. Pace, Pace Seed & Supply Co., Cleveland, Miss.; and Jacob Hartz, Jr., Jacob Hartz Seed Co., Stuttgart, Ark. Just below are some of the 800 people who stood in line to be served at the barbeque.

In center at left, is the flame weeder in action at the Clarkedale soybean plots. Just below, three scientists from the Delta Experiment Station, Stoneville, Miss., partake of the lunch at Bassett Park. They are: Robert B. Carr, E. E. Hartwig and Howard W. Johnson.

At right, three men from the Orient look at a plot of U. S. soybeans. They are: P. C. Hsu, Chinese representative on FAO; S. S. De, India; and Victorino P. Paredes, Philippine embassy.

Bottom left, relaxing at Bassett Park: Dr. John Gray, Baton Rouge; Mrs. G. G. McIlroy, Irwin, Ohio; Mrs. John Gray; Mrs. David G. Wing, Mechanicsburg, Ohio; Mrs. Heartsill Banks, Kansas City; Mrs. V. Lee McMahon, St. Louis; and David G. Wing.

Bottom right, also at Bassett: Mrs. Banks; Mrs. McMahon; Mrs. Jeanne M. Strayer, Hudson, Iowa; and Mrs. Parke Burrows, Evanston, Ill.

All pictures read from left to right. Soybean Digest photos.

U. S. farmers will continue to grow." A fair percentage of soybean growers can, at any time, convert their acreage into other uses. On the other hand with more high value usage, a sounder and more adequate storage and marketing program, the broadening of our markets and the realization of a price more nearly in keeping with the potential value of our product, soybean production can be increased. This increase might be very helpful to adjust our agricultural production to more nearly meet our exact domestic and foreign needs. We consider it important that all segments of our soybean industry be kept strong and that can be done only through maintaining, and perhaps increasing, our soybean production.

Let us repeat that:

a. High value usage is required to assure a satisfactory price.

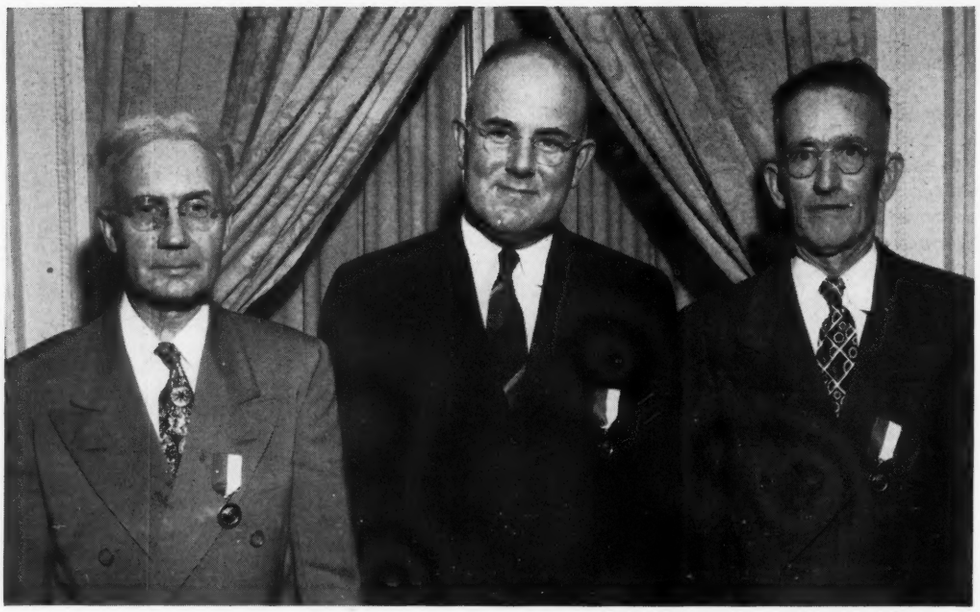
b. A satisfactory price is required to assure volume of production.

c. An assured volume of production is desirable and necessary.

To that end we must devote our very best efforts.

ERSEL WALLEY,
Fort Wayne, Ind.

(Continued on page 72)



Left to right, C. M. Woodworth, David G. Wing, J. B. Edmondson. —Woodard's Photographers

HONORARY LIFE MEMBERS

J. B. Edmondson, Danville, Ind.; David G. Wing, Mechanicsburg, Ohio; and C. M. Woodworth, Urbana, Ill., were chosen honorary life members of the American Soybean Association at its 28th convention in Memphis, bringing the total number of life members to eight.

The new life members were introduced at the annual banquet by W. G. Weigle, Van Wert, Ohio, chairman of the awards committee. The awards were presented by Ersel Walley, Association president.

Life members previously elected are: W. J. Morse, Bureau of Plant Industry, Be't-ville, Md.; W. L. Burlison, University of Illinois, Urbana, Ill.; I. C. Bradley, Allied Mills, Inc., Taylorville, Ill.; J. C. Hackleman, University of Illinois, Urbana, Ill.; and G. G. McIlroy, Farm Management, Inc., Irwin, Ohio.

Following are the presentation talks made by Weigle:

J. B. Edmondson

J. B. Edmondson was born at LeClair, Ind. His formal education was obtained at Clayton High School, Milliken University and Purdue University. He graduated from the latter school with a B.S. degree in agriculture in 1911.

Following graduation Mr. Edmondson was assistant state geologist of Indiana for 2 years; then for a year he was editor of *Farmers Guide* at Huntington, Ind.

After 1914 he farmer a 160-acre farm south of Clayton, Ind., until he turned active farm operations over to his son, John, a year ago and moved to Danville, Ind.

Mr. Edmondson has always found time to take an active part in community activities and has worked extensively with the local and state agricultural extension services. In 1947 and 1948 he was chairman of the Hendricks County Corn Growers Association and is now the president of the Indiana Corn Growers Association.

Mr. Edmondson was one of the pioneer soybean growers in Hendricks County and Indiana, and has been a certified seed producer of soybeans and other small grains. When anyone in his home town is asked about J. B. Edmondson they immediately associate him with the soybean business. He grew his first crop of soybeans in 1914, which was a failure due to lack of knowledge. He has continued to talk and grow soybeans every year since.

In 1925, he was made president of the Mid-state Soybean Association, the first farmer organization to promote high quality certified seed. Almost from the first he has been active in the American Soybean Association and for many years served as one of its officers, as vice president, as secretary and treasurer. He is still a member of the Associations board of directors.

David G. Wing

David G. Wing was born on Woodland Farm near Mechanicsburg, the son of Joseph E. and Florence S. Wing. We older individuals all remember Joseph E. Wing through his years of association with the *Breeders Gazette*, and his pioneer work with the alfalfa crop.

Dave's early schooling was in the one-room country school house. Later he graduated from Mechanicsburg High School only a few miles away from his farm home. After high school he attended Ohio State University where he graduated from the college of agriculture. He served several years in the Army during World War I.

He is one of Ohio's outstanding farmers and it is not by chance that he has that reputation. His father and mother loved everything connected with a farm and country life. They appreciated nature from every angle. It was under this influence and with this background that Dave was reared. He loves good land, good crops and livestock and what one can observe on his farms proves this statement. He is a soybean enthusiast of many years standing and his soybean crops are always among the best of the community.

Dave was president of the American Soybean Association for 2 years, on the board of directors many times. He has given freely of his time and energy in a very efficient manner in Washington on many legislative missions—he has been always ready to respond when the call came.

It is entirely fitting that this honor should be bestowed upon a man who has done so much to establish soybeans on Ohio farms, and has given so much of his time to state and federal legislation relating to soybeans.

C. M. Woodworth

C. M. Woodworth graduated from the Perry, Okla., high school. His university

(Continued on page 100)

THE SOYBEAN MOVES SOUTH

The soybean is moving south. Statistics prove it. Soybean acres and yield jumped 5-fold during war and postwar years in the six Midsouth states, Arkansas, Kentucky, Missouri, Mississippi, Louisiana and Tennessee. At the same time acreage and yield tripled in the 12 Southern states served by the U. S. Regional Soybean Laboratory.

But the South is only once again claiming her own. An old sea captain, we are told, first brought soybeans direct from the Orient to North Carolina. Planters grew them there as "Japan peas". Under the prodding of such enthusiasts as the late C. B. Williams at the North Carolina Experiment Station, the growing of soybeans spread rapidly in the South.

The first American-grown soybeans were processed in North Carolina, and they were first processed by solvent-extraction in Virginia.

In 1920 the five leading soybean states were all in the South. But in following years Southern farmers lost interest, due to lack of suitable varieties, the lack of harvesting machinery, and mainly perhaps, to the pull of past habits that tied them to a single crop. The Nation's soybean center shifted to the Cornbelt. By 1935 Missouri was the only Southern state included in the first five in soybean production.

During the war and postwar the South turned again to soybeans. She is now growing far more of them than ever. The combine has come in to make them more profitable. The call for diversified farming is at last beginning to be heeded in the South as elsewhere. New and better varieties such as S-100 and Roanoke are coming from the experiment stations.

The soybean at no time lacked for true friends in the South. There were men who believed in its ultimate triumph there—breeders working for private firms and the Regional Soybean Laboratory and the state experiment stations, growers who kept on planting the crop, and agricultural leaders like J. B. Crain who built processing and refining plants, grew large acreages themselves and induced others to follow suit.

These men were quietly at work preparing for the day of the soybean's return. Their work is now rewarded. No one now can doubt that the soybean along with cotton and other typical Southern crops will remain to share in the South's destiny.

Harvest scene on W. M. Scott farm, Tallulah, La.

ERSEL WALLEY

Soybeans in the EUROPEAN RECOVERY PROGRAM

By ERSEL WALLEY

THE PRIME purpose of my trip to Europe was to secure firsthand information regarding European agriculture and to observe "at grassroots" the general economic conditions of those countries in order to evaluate the likely affect of those factors on American farm business.

Having learned of my plans, our aggressive secretary and several members of the board of directors of the American Soybean Association urged me to make a study of the place that soybeans might play in the rehabilitation and postwar economy of Europe. In fact our secretary wrote letters to many contacts which his office has throughout Europe, so many in fact, that time and conditions did not permit me to visit all the people to whom he had written.

To keep the record straight it should be stated affirmatively that I paid all my own expenses out of my own pocket and, therefore, I am free to use the information which I received as I desire. This independence, however, does not preclude my willingness and pleasure to report to the American Soybean Association on my observations and conclusions.

I landed first in France and on arrival in Paris contacted the various organizations interested in soybeans and soybean products, including the Ministry of Food. It surprised me to learn that in France there are no less than six definite, strong organizations interested in the promotion and use of soybeans and soybean products in human and animal nutrition. At least one of these organizations issues a monthly publication devoted entirely to general education in the use of soy products.

I should explain at this time that I carried with me a very generous supply of *Soybean Digests*, copies of the 1948 *Soybean Blue Book*, samples of refined soybean oil, and four reels of 16 mm. sound movie films, showing the production of soybeans in this country and methods of utilizing the end products. The most successful showing of these movies was perhaps in Paris, where we had a total attendance of 25 leaders from the Ministry of Food and the agricultural and food processing industries at our showing. Kodak Pathe has a very fine projection studio at its Paris office and very kindly extended the use of these facilities to us. At the request of our secretary, copies of the *Blue Book* and *Soybean Digest* were put on exhibit in the International Congress of Agricultural Industries, held in Paris during the week of July 12-18, 1948.

Historically, French people have had a pretty fair diet and have always been heavy users of fats and oils. Currently, they are very short of these products; and the diet, as I found it, reflected the effect of very short supplies. From the most reliable information which I could get, France needs approximately 50 percent more fats and oils for human consumption than she now receives to bring her diet up to anywhere near prewar levels.

The reception which I received everywhere in France by those interested in the soybean industry was most cordial and constructive. It is impossible in this brief report to mention the individuals and firms to whom I am indebted, but I shall, from my notes, bring out two or three experiences which may serve to explain the general situation in France as it might affect the soybean industry.

Soy in France

An important group of food industries has made a valiant effort to popularize soy products. This campaign has been slowed up due to the fact that various industries hesitate to put more money into it until they have some assurance that they will be able to receive adequate soy supplies, including whole beans.

The unfavorable reports on the use of soy products in France arose from the use of soya flour with corn flour alone during the emergency of 1947. The bread was evidently very bad and aroused some opposition to soya flour due to this misuse of it.

It was my privilege to spend some time with the director of research for a group of French oilseed processors and handlers. This group is particularly interested in the development of the oilseed industry in the French colonies, particularly expansion of the palmseed production. This director went into great detail as to the nature of their work and the problems which they had encountered. They are proceeding on the theory that maximum production of vegetable oil is necessary in the French food and industrial economy and trade with their own colonies is more certain than that outside their own empire. He related his observations of the peanut and sunflower production in Africa, not only in the French colonies but in the British colonies as well. He readily admitted that while his work did not concern soybeans yet he recognized their high potential value for human food, particularly since they contain not only edible oil but protein vitally needed in the French food economy and ended his comment with the simple statement: "But we can't get any beans."

Another of the very interesting experiences was a visit to the modern solvent oilseed processing plant at Bordeaux, which visit was reported in the July 1948 issue of the *Soybean Digest*. This plant is located on the river channel and ocean-going vessels can

(Continued on page 58)

• The president of the American Soybean Association spent most of the summer in Europe observing conditions. He says there is a big potential market for American soybeans abroad.

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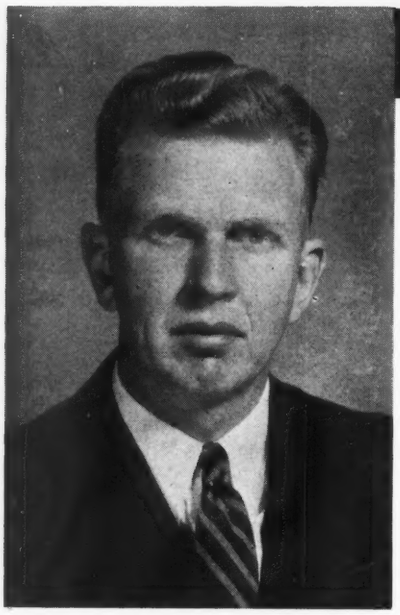
RESEARCH

Breeding Soybeans FOR THE SOUTHERN STATES

By EDGAR E. HARTWIG[1]



E. E. HARTWIG

CERTAIN qualities are desired in a soybean variety regardless of where it is grown. These qualities are high seed yield, good seed quality, high percentage of oil and protein, adaptability to combine harvesting, and freedom from disease injury. However, one quality which does differ markedly both in requirements and behavior is maturity. Maturity and adaptation to specific environments are characteristics which make southern varieties different from Cornbelt varieties.

Nearly 30 years ago plant physiologists learned that soybeans were very sensitive to length of day. That is, some types will begin to flower and develop seed with 16 hours of daylight while other varieties will not begin to reproduce until day length is 14 hours or less. Under the day length conditions occurring at Memphis during the growing season all strains adapted to the central Cornbelt area will begin flowering in about 30 days after emergence. Consequently they make only limited growth and mature too early to give maximum seed yields. On the other hand a variety like Ogden which makes good growth and matures about October 10 at Memphis will not mature before frost in central Illinois.

During the past several years we have been evaluating soybean varieties with regard to their specific qualities and characteristics. We are not only interested in learning which are the best strains available but also what characteristics each strain possesses so that we might use these good qualities in our improvement program.

Soybeans are a self pollinated crop. Once a variety is established as a uniform type, we have practically no chance of making any improvement by selection within that variety. To make improvement we must have variability. To get this variability it is necessary to make crosses between types possessing the different characteristics and selecting in later generations. Some of the more advanced work has dealt with getting improved seed holding, adaptation to specific areas, and disease resistance.

One of the varieties well adapted for seed production in much of the South is Ogden. The Ogden variety gives excellent seed yield, stands up well, is moderately resistant to the bacterial leaf diseases, and has a quite satisfactory oil content. However, Ogden will shatter under some conditions and also sometimes produces seed of poor quality. One of the types chosen to combine with Ogden to correct these weaknesses was the Ralsoy variety. This variety has excellent seed holding qualities, but gives much lower seed yields especially when the fertility level is such that Ogden will yield 35 to 40 bushels per acre. Ralsoy also is quite susceptible to bacterial pustule and wildfire.

The problem then is to maintain as many Ogden qualities as possible but still add seed holding. Since the genes conditioning the various characteristics segregrate and recombine more or less at random in the F_2 and later generations it is necessary to observe rather large numbers in order to obtain the desired combination. Disease susceptible and shattering plants or lines can be eliminated in the second or third generation by observation, but we have no method of predicting by observation which strains are going to be the best seed producers. To pick out the best yielding strains it is necessary to grow them at several locations to evaluate their adaptation to different environments.

After testing numerous strains from the cross Ralsoy x Ogden, one of the most promising strains is N45-2994. While this strain has not been tested thoroughly enough to know its adaptability, it appears to possess many of the good qualities of each parent. Other strains with good seed holding qualities have also been crossed with Ogden to bring about improvement in seed holding. We believe that some of these crosses will give non-shattering strains equal in other respects to Ogden.

Chinese Strains

Several types introduced from the vicinity of Nanking, China, such as Palmetto, Missoy, Nanking, and CNS make excellent growth on the Coastal Plain soils of the lower Southeast. However, each of these strains has a low oil content. Crosses have been made using these types with Ogden, Volstate, and Roanoke. Selections from these crosses are now in advanced stages of testing. Some of the better strains such as N45-3563, N45-3728, and N46-2652 possess many of the growth qualities of Palmetto and Missoy plus approaching Roanoke in seed holding and oil content. It is anticipated that some of these strains will provide good seed varieties in an area where the varieties like Ogden and Roanoke have not been too well adapted.

Another phase of the breeding program has been directed toward transferring resistance to bacterial pustule and wildfire to the better seed producing types. Both of these diseases are frequently present in soybean fields. One of the first strains to be identified as carrying a high degree of resistance to both bacterial pustule and

● Improved varieties are now available for nearly all parts of the South, and still better ones are in the offing.

[1]Agronomist, U. S. Regional Soybean Laboratory, Bureau of Plant Industry Soils and Agric. Eng., Agric. Research Administration, U.S.D.A.

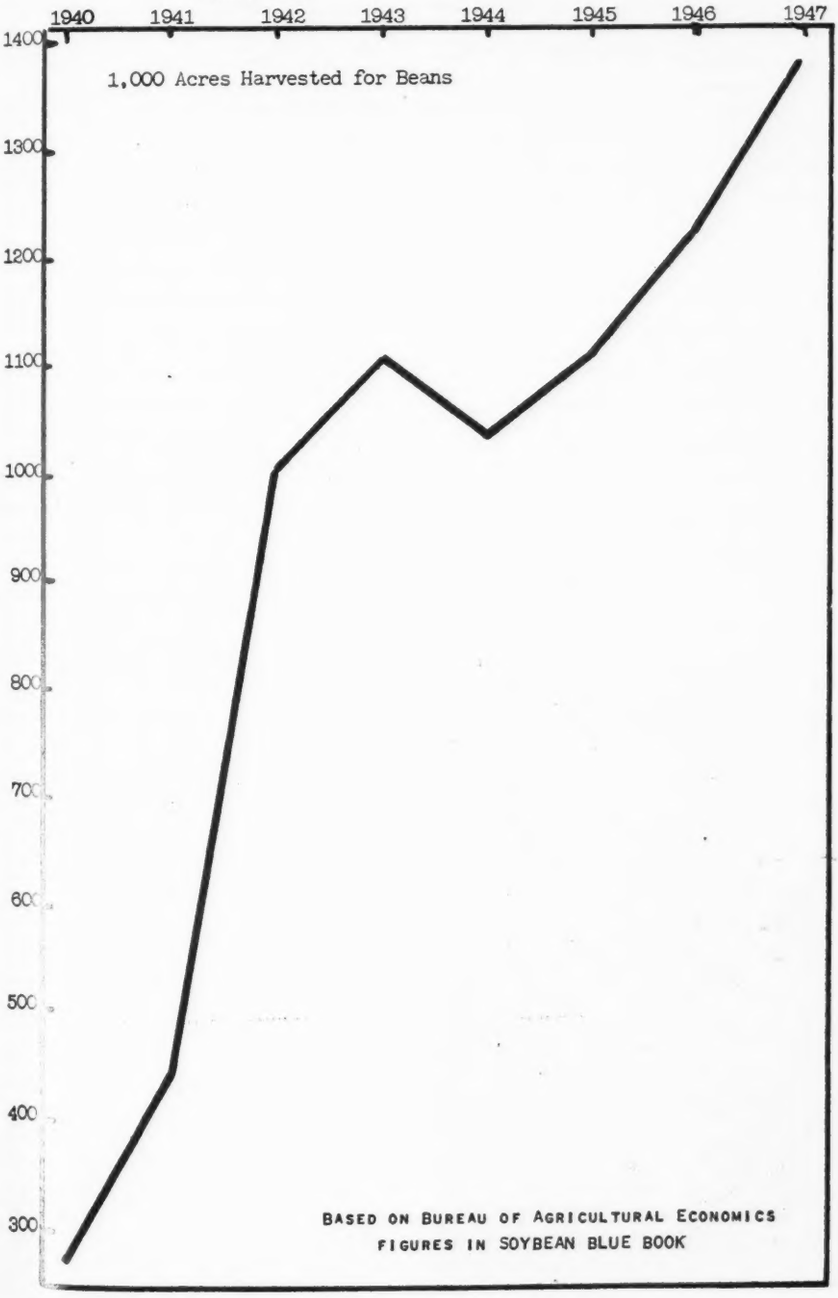
wildfire was the variety CNS. CNS as a variety is not well adapted for production in the two major production centers of the South—the coastal plain area of North Carolina and Virginia or the Delta area of Arkansas and Mississippi. In these areas it lodges badly, produces low seed yields, and has a low oil content.

The first crosses using CNS as a parent were made in 1943. Its resistance to bacterial pustule appears to be rather simply inherited. However, from the first cycle crosses strains which carried the desired degree of disease resistance have not equalled Ogden or Roanoke in seed production or oil content in their areas of best adaptation. These strains do equal CNS in disease resistance and surpass it in agronomic qualities. The better strains from the crosses with CNS carrying resistance to bacterial pustule and wildfire have been crossed with the best agronomic types for the different production areas of the South. It should not be long before types carrying a high degree of resistance to these two bacterial leaf diseases along with good seed production and high oil content will be available.

Several insects frequently cause severe defoliation in the region. One of the worst offenders is the velvetbean caterpillar. On several occasions differential feeding has been observed when velvetbean caterpillars have moved in on a nursery containing different strains. However, each of these least desired strains has been observed to be severely defoliated by the same insect when grown alone. Consequently we do not have sufficient differences upon which to base a program for resistance to velvetbean caterpillar attack at the present time. The insect can be controlled by dusting.

RISE OF SOYBEAN ACREAGE IN THE MIDSOUTH, 1940-47

States shown: Arkansas, Kentucky, Missouri, Mississippi, Louisiana and Tennessee



Very few varieties have been available to fill a maturity gap between such varieties as Patoka and Gibson which are grown in southern Indiana and Ogden which is about 3 weeks later. This season a considerable acreage has been planted of the variety S-100 which fits in very well between these other varieties in maturity. S-100 is recognized as carrying somewhat lower oil content than other popular varieties, and a somewhat greater degree of susceptibility to the wildfire disease. These qualities will probably restrict the use of S-100 as a variety. Other strains derived from crosses between productive Cornbelt varieties and medium early Southern types are now in test. In preliminary trials some of these strains which are similar to S-100 in maturity have surpassed it in other qualities, especially oil content.

Good Soil Needed

While it is possible to breed superior varieties of soybeans which will give higher seed yields because of better adaptation to specific environments and a better complement of genetic factors for yield, it must also be recognized that the seed yield of any variety is closely associated with the productive capacity of the soil. A 40-bushel soybean seed crop removes in the seed the equivalent of 300 pounds 0-10-20 fertilizer. If the phosphate and potash supply in the soil limits production to 20 bushels per acre, little is to be gained by planting a variety having a higher yield potentiality. Very often improvement in fertilization practices is the first step necessary toward improving seed yields. Likewise other cultural practices such as stand and weed control cannot be neglected if high yields are expected.

At the present time varieties like S-100, Ogden, Roanoke, and Acadian offer maturity range for production in almost any area of the South. Each of these strains has the capacity to produce high seed yields in areas where adapted, providing of course that the nutrient requirements are fulfilled. It is recognized that these and other varieties have limitations and breeding work is in progress to correct some of these defects. Furthermore, it is recognized that progress in any breeding program is dependent on knowledge of the inheritance of the various qualities and characteristics. We, therefore, are interested in problems directed toward gaining further genetic information as well as practical improvement.

ARKANSAS EXPERIMENT STATION PROGRAM

and the Clarkedale Station

By R. P. BARTHOLOMEW
Associate Director
Arkansas Agricultural Exp. Station

AGRICULTURE has made more technological improvements during the past two decades probably than any other industry. The rapid adjustments which would be required to make use of all of the new improvements in farm equipment, seeds, and types of fertilizers make it necessary for the farmers to have some research organization trying out the various improvements as well as attempting to find new ones.

The Arkansas Experiment Station system was established many years ago to serve as a research agency which would help the farmers of Arkansas, as well as those in other parts of the United States, to keep pace in their production efforts with the various advances being made. How well the various research organizations of the country have been performing this service is shown by the record yields of crops which have been produced during the past few years.

The Arkansas system centers around the laboratories, greenhouses, and experimental farm located at Fayetteville. Branching from this center are the Fruit and Truck Branch Experiment Station near Hope, the Rice Branch Experiment Station near Stuttgart, the Livestock and Forestry Branch Experiment Station near Batesville, the Cotton Branch Experiment Station near Marianna and its Delta Substation near Clarkedale. In addition, special experimental fields are located in southeastern, east central, central, and northeastern Arkansas to study production problems with peaches, vegetables, strawberries, and alfalfa for which the soils in the particular locations are especially adapted. By having the stations located in the areas of the state devoted to a particular crop, such as rice at the rice station, it is possible for the research worker to carry on his experiments under conditions exactly like those facing the farm producer. In addition, it keeps the research worker in closer contact with the problems confronting the producer.

Delta Area

The Delta Substation was established to perform these functions for farmers operating on the alluvial soils of the Delta area of Arkansas. It embraces "Sandy Land, Mixed Land, and Buckshot" which are typical of the Delta area. The projects outlined for operation on this station are designed to supply as much information as possible to help in maintaining an increasing production on Delta soils. Some of the experiments with varieties are very similar to those being conducted on the other stations because it is necessary to determine the variety or varieties of soybeans, corn, cotton, etc., which are especially adapted to the different soil conditions.

● King Cotton receives major emphasis at the Clarkedale Substation in the heart of the cotton country. But other crops like soybeans are getting attention.

R. P. BARTHOLOMEW

It is to be anticipated from the fact that the station is located in one of the largest cotton-producing areas of the world that this crop receive major emphasis. At the present time, approximately 100 acres are devoted to experiments associated with the production of cotton by mechanized methods. Included are investigations of various methods of machine operation for seedbed preparation, planting, and cultivation. The influence of varieties on harvesting by mechanical means, and various factors associated with proper defoliation to facilitate harvesting are also being studied.

A cotton breeder has recently been stationed at the Cotton Branch Station. This makes it possible to expand the program of cotton improvement, and part of the breeding work will be at the Clarkedale substation in order that varieties especially adapted to the area may be developed.

Experiments are also being conducted with different vegetable crops to see if, through varietal selection and proper fertilization, these crops can be grown on the Delta soil.

Experiments have been planned—and are gradually getting under way—to determine soil management and fertility practices which will enable producers of alfalfa to maintain stands and increase production.

Adair's Work

Experiments were inaugurated a number of years ago to breed and select varieties of soybeans which will have a wide adaptation to the state. Dr. C. Roy Adair was working in cooperation with a project leader from the experiment station towards this end. Unfortunately, he has had to carry the brunt of the work by himself during the past few years and has not been able to do as much as he would like. However, as a result of the work which he has been carrying on, we are increasing at the Rice Branch Experiment Station this year seed of S-100, which will be made available to Arkansas producers. We hope that we will be in a position to give Dr. Adair more assistance and that we can provide higher yielding soybeans with a high oil content for those sections of Arkansas which are now becoming major soybean-producing areas of the country.

Soybean Research at the
NORTHERN REGIONAL RESEARCH LABORATORY

By R. T. MILNER[1]

Northern Regional Research Laboratory- Peoria, Illinois

IT IS ALWAYS a pleasure to represent the Northern Regional Research Laboratory before the American Soybean Association. The close cooperation between our two groups and the assistance which members and officials of the Association have furnished the Laboratory make us anxious to present our work to you in some detail.

We have made these reports at each of your annual meetings for several years, and I must caution you that we cannot report on completely new work each year. Some of our projects are long-term. As you know, we have worked continuously for many years and have reported on the big problem of improving soybean oil for protective coatings. We have made marked improvements, and are continuing our research. There are other phases we have discussed and could deal with again, but time is not available to cover our full current research program on soybeans. Instead, I have selected four of our projects on which I think we have made some progress, and the results of which should be of interest to you.

Alcohol Extraction

During the past few years we have devoted a great deal of attention to the alcohol extraction of soybeans. The process which we have developed has a number of interesting and novel features and advantages. In this process, flaked soybeans are extracted with 95-percent alcohol at high temperatures. If the soybean flakes are extracted at the boiling point of alcohol, the amount of alcohol required to remove all the oil is in the ratio of six parts of alcohol to one part of flakes.

If the process is carried out under slight pressure, for example at 15 pounds above atmospheric, the quantity of alcohol needed to remove the oil is reduced sharply, the ratio in this case being 1:1. From a practical standpoint, the pressure process appears to be the better. Although the initial cost of equipment is higher, the quantity of solvent needed is much less and hence operating costs are lower.

To recover the oil, the alcohol extract is cooled to about 60° F. During the cooling process, the solution of alcohol and oil separates into three phases—alcohol, soybean oil, and some solid matter, with a small amount of an emulsion remaining at the interface. Slight heating of this mixture breaks the emulsion, and permits the solid matter to sink. The alcohol, soybean oil, and solids can then be readily separated.

This cooling process for separating the alcohol and soybean oil eliminates the need for recovering the major portion of the alcohol by distillation. In our tests, the reclaimed alcohol has been recycled as much as 85 times without loss in its solvent power and without the necessity of purifying it by distillation.

The soybean oil separated in the cooling process still contains about 7 percent alcohol. This alcohol is removed from the oil by vacuum evaporation and recovered. The oil contains only .06 of 1 percent of free fatty acid, as compared with higher amounts of fatty acid usually found in hexane-extracted oil. It is unnecessary, therefore, to alkali refine alcohol-extracted soybean oil. With one water washing, an excellent non-break oil is produced. Soybean oil obtained by this process is an excellent product either for production of paint oils or for food uses.

The solids which separate in the cooling process consist of lecithin, sterols, saponins, glucosides, and other products. Approximately 40 percent of the solid matter consists of lecithin. We have not yet had opportunity to investigate thoroughly the composition of this solid material, or to separate it into its components.

The meal obtained from the alcohol-extraction process, in contrast to hexane-extracted meal, is free from bitter principles and coloring matters. It has a bland flavor and is excellent for food uses. Except for color and flavor, hexane- and alcohol-extracted meal are practically identical in properties.

This process has been studied thoroughly on a laboratory scale, and some steps have been evaluated on the pilot-plant scale in cooperation with Allied Mills. A number of other companies also are engaged in pilot-plant investigations of this process. The alcohol-extraction process appears to have considerable promise.

Soy Adhesive

Soyagel, an irreversible gel, is another product we have recently developed. Soybean meal, obtained after the alcohol extraction of the flakes, yields a very interesting product on water extraction. By treating one part of the meal with six parts water, 70 percent of meal goes into solution. The solid matter in the extract can be readily recovered by spray drying. Fifty-five percent of this solid product consists of protein, but the solid is readily soluble in water in almost all proportions.

A solution made from this material and having a protein content of from 5 to 10 percent will gel when it is heated to 90° C. The resulting gel is irreversible, that is, the protein has been so altered by the heating process that it will not redissolve on cooling. The gel has the consistency of a gelatin dessert. The properties of this proteinaceous product, therefore, are somewhat similar to egg white.

This gel has interesting possibilities in both food and industrial fields. It can be used as an adhesive for sealing envelopes which cannot be opened by ordinary steaming. Envelopes having this type of adhesive would be useful in banks and for

● Discussion is of alcohol extraction; an irreversible gel useful in food and industry; evaluation of new varieties for processing; and stability of soybean oil. Author is now head of the Laboratory.

[1]Presented by R. T. Milner at the annual meeting of the American Soybean Association, Memphis, Tennessee, on September 13, 1948. Report of a study in which certain phases were carried on under Research and Marketing Act of 1946.

[2]One of the laboratories of the Bureau of Agricultural and Industrial Chemistry, Agricultural Research Administration, U. S. Department of Agriculture.

enclosing important types of correspondence. The envelopes can be sealed either by moistening and then sealing, or merely by heat sealing, that is, when the dry adhesive on the envelope flap is hot pressed it liquefies sufficiently to seal the envelope. This adhesive also has promise for the labeling of tin cans. In contrast to dextrins, the ordinary type of adhesive used on labels, this soybean adhesive wets metal. Since the label will stick to metal it is not necessary to wrap it completely around a can to obtain a seal.

One use already has been worked out under commercial conditions. This soybean protein has been shown to be an excellent substitute for technical non-edible egg white in the crown seal industry. In sealing the cork to the metal cap, egg albumin has, until now, been found to be the only satisfactory adhesive. Technical egg white has the disadvantage, however, of costing around $1.50 a pound. In cooperation with the crown seal industry we have found that this new type of soybean protein can satisfactorily replace technical egg white.

Pilot-plant investigations on the production of this novel type of soybean protein are now being carried out in cooperation with Allied Mills. Preliminary estimates indicate that this soybean protein can be produced at about 15 cents a pound from extracted meal at $80.00 a ton. As alcohol-extracted soybean meal is not being produced on a commercial scale at present, it was of interest to determine whether commercial hexane-extracted soybean meal would yield this same type of protein.

Does Not Gel

To our surprise, water extraction of hexane-extracted meal yields a proteinaceous product which *does not gel* when heated in water. We have found this to be due to the presence of a gel inhibitor in the hexane-extracted meal. Treatment of hexane-extracted meal with water dissolves not only the protein, but also the gel inhibitor. This gel inhibitor can be readily removed by treating the hexane-extracted meal first with alcohol. The inhibitor dissolves in alcohol and can be readily recovered from it.

In the alcohol-extraction process for separating the oil from soybean flakes, the gel inhibitor and, of course, other products as well as the oil, are removed from the meal. For this reason, the heat gelling protein can be obtained directly by water extraction of the meal resulting from the alcohol process. The inhibitor is not soluble in hexane and must, therefore, be removed from hexane-extracted meal by alcohol before treating the meal with water to obtain the heat gelling protein. Work has not been completed on this gel inhibitor, so I am unable to tell you about the chemical nature of the material.

The engineering and development division of our Laboratory has set up a complete pilot plant to investigate thoroughly all phases of the alcohol extraction of soybeans in particular, and the solvent extraction of soybeans in general. This pilot plant is now "on stream" and we are learning how to operate it successfully after a great deal of trouble in obtaining the proper equipment. Pilot-plant equipment is also being assembled for the study of alkali refining, bleaching, deodorization, and hydrogenation of soybean oil.

R. T. MILNER

Soybean Varieties

One project we plan to start soon is the thorough evaluation, from the processing standpoint, of new varieties of soybeans. This work will be done in cooperation with the Regional Soybean Laboratory at Urbana, Ill., and with state experiment stations. As you know, in developing new varieties of soybeans, plant geneticists are mainly concerned with the agronomic characteristics of these varieties. In addition, the oil content of new varieties of beans is determined, as well as the iodine number of the oil.

No information is obtained, however, on the processing characteristics of promising new varieties. When a new variety is released for commercial production, it is not known whether the processing industry will be able to handle the new bean with ease or with difficulty. Furthermore, little information is available on the quality of the oil or of the meal produced. This type of information has not been obtained in the past, except in rare cases, because facilities have been lacking. With the type of pilot-plant equipment which we are now obtaining, thorough evaluation of new varieties of soybeans can be made and this, of course, we expect to do.

Oil Stability

You have heard discussions of work by this Laboratory on this important topic in previous years. We are continuing our work in this field with increased emphasis through the Research and Marketing Act of 1946. With increased funds, we shall be able to attack this problem from many angles. We have reported to you on our study of the use of citric acid and we believe that this discovery is finding a great deal of commercial use with consequent improvement in the finished soybean oil.

Today, I should like to mention our work on another phase of this same problem, soybean lecithin. Soybean oil is somewhat unique in the amount of phosphatides that it contains. These materials, with associated gums and mucins, have been used commercially for a wide diversity of products. Many studies have been made of their properties and some investigations of their composition. At the present time, however, information on the composition of "soybean lecithin" is surprisingly meager. It is currently accepted that this material consists of approximately 35 percent lecithin and 65 percent cephalin. It is recognized that smaller amounts of many unknown constituents also may be present. This mixture, with its many industrial uses, may also play a most important role in the stability of soybean oil. Opinion is divided as to whether the phosphatides help or hinder in this respect. In trying to solve this question, the first requisite is a more exact knowledge of the composition of the phosphatides.

With the development of each new physical tool, it has been applied to this complex mixture. In the past, it was hoped that adsorption and partition chromatography could be used to separate pure constituents from the mixture. This attack was unsuccessful.

During the past 12 months we have applied the technique of countercurrent distribution developed by Craig of the Rockefeller Institute. This separation procedure has been used with marked success in differentiating the various penicillins. Our results are necessarily preliminary up to now, but we have made marked progress. In principle, the countercurrent distribution apparatus consists of a series of separate vessels, each containing two immiscible solvents. The material is added to the first vessel, distributed between the solvents by shaking and allowing the solvents to separate, and then moved countercurrently into the next vessel. Our particular apparatus provides for 24 successive operations of this nature. After completion of the operations, the contents of each vessel are analyzed. In this way we have been successful in separating out relatively pure fractions and we find that soybean phosphatides contain approximately 29 percent lecithin, 31 per-

(*Continued on page 82*)

THE NATIONAL COTTON COUNCIL

Its Organization and Functions

By ALBERT R. RUSSELL
Assistant to Executive Vice President,
National Cotton Council

William Rhea Blake, executive vice president and secretary of the National Cotton Council since 1942, is one of the nation's ablest administrators of industry organizations.

THE story of cotton is the story of the South and more—the story of a land area which spans the continent from Virginia to California. It is a story of man's efforts to clothe and feed himself and to provide himself with goods and services needed to maintain the high standards that modern civilization makes possible. But more than these, cotton is a story of people —15 million people. And during the past 10 years, it is the story of these people, joined together in common purpose to increase the consumption of the most used and most versatile fiber of all history.

The stake has been, and is now, the throne of King Cotton.

The National Cotton Council was born of the need of cotton people to work together. But it was the brain child of one great American, Honorable Oscar Johnston, of Scott, Miss., who, with characteristic vision, recognized that cotton was really sick, and that if something were not done, this remarkable fiber eventually would die as a force in the economic life of the nation. In 1938, Mr. Johnston called about him representative cotton leaders from over the belt to discuss cotton's ills and to determine what could be done about solving them. There are two things to remember about this small nucleus of business men. They were cotton people, dependent on the fiber and seed of this commodity for their respective livelihoods. And secondly, they represented five branches of the industry—the farmer, the ginner, the warehouseman, the merchant and the cottonseed crusher.

Conference Results

Out of this conference came two major decisions. One—cotton's principal problem was that of under-consumption; and secondly, if the problem were to be solved, only a coordination of effort by the various segments of the industry would do it.

The idea of a Council of cotton interests to increase consumption of American-grown cotton was the seed out of which grew the National Cotton Council of America.

The plan was imaginative, and it soon caught fire. So confident of Mr. Johnston and his ability to do this job was the Mississippi legislature that in 1938 its members passed a bill and the Governor signed into law an appropriation of $9,000, to defray the expenses incident to organization and early operation of the Council.

This $9,000, donated by the people of Mississippi through its elected representatives, was a modest sum for so great an undertaking. However, of this amount, only $6,255.14 was expended upon the promotional and organization work which resulted in the permanent establishment of the Council, and the remainder, $2,755.76, was paid into the treasury of the Council as the initial deposit to support cotton's fight for consumption.

Fourteen States

Fourteen state units were formed from the 18 cotton producing states, with three representatives each from the original five cotton interests—producers, ginners, warehousemen, merchants and cottonseed crushers—in each unit. Texas, because of its unusually large production, was allowed four additional producer delegates. It was on these state units that the responsibility of financing the program was placed. The goal for the first year's operation was set at $240,000 or about 2 cents per bale of cotton produced. Quotas were allocated to the state units on the basis of the November 8 crop estimate that year, the money to be raised in whatever manner was determined upon by the individual units. This marked the Council's first attempt at financing its operations. That year, to aid in securing financial support at the "grass-roots" level, to further a cotton educational program and to stimulate interest in the Council and its activities, county committees were established to work with state unit organizations. Membership on these committees varied, but in all instances civic and industry leaders were sought to perform the vital function of selling the Council and its program to their respective counties.

Naturally, there was considerable expense involved in collections by state units through county committees in the 850 cotton-producing counties, and quite a wide variation, also, in the methods of collection. For reasons of economy, therefore, and a unified plan of financing, it was decided that responsibility for collections on the 1939-40 crop would be placed in the hands of the management of the Council and its administrative officers, through field representatives to be employed by the Council. The next and all succeeding finance programs have been the responsibility of the management through its field service department.

In an effort to arrive at an equitable rate of participation in the financing of the Council's program as among the five primary raw cotton interests then composing the Council, a plan was inaugurated whereby the producer would be asked to contribute 1c per bale on cotton produced and the ginner 1c per bale on cotton ginned—the ginner to collect from the producer and remit to the Council; the crusher would be asked to contribute 1½c per ton of seed handled; the warehouseman and the merchant, ½c each per bale handled.

It was apparent to the Council's board of directors in the spring of 1940 that the expanded program activity of the Council warranted increased support. A goal of $500,000 was set for 1941. In that year also the spinner interest was brought into the Council as the last great segment of the raw cotton industry.

How Plan Evolved

During 1940, and, in fact, up until 1944, the finance plan was given constant and careful study by the finance committee, the administrative officers and the management of the Council, in an effort to develop a satisfactory collection agency for the producer-ginner dues which could be more economically dealt with than by direct contact with the 8250 active gins throughout the Belt. During this time the organization tried a plan of collecting producer contributions through the merchants, the mer-

Ed Lipscomb, director of sales promotion and public relations of the National Cotton Council since its organization, is known as one of the nation's foremost authorities on this work.

chants, in turn, passing these collections on to the compresses as an additional charge on first compression, and the compresses remitting to the Council, together with their own per bale contribution. The ginner contribution was collected by the crushers on the basis of per ton of seed purchased, and remitted to the Council by the crushers, together with their contribution per ton of seed crushed.

Experience during these 4 years, however, indicated to the Council that its first method had been the best—that is, collecting directly from the individual interests where the number of necessary contacts was not prohibitive, as in the case of the ginners, warehousemen, merchants, crushers and spinners; and where impracticable, as in the case of the approximately 1,200,000 farm families constituting the producer interests, as close to the producer as possible—the ginner. By the long and hard, but valuable, road of experience, therefore, we came back, in 1944, to our initial system of collecting producer contributions through the ginner.

So it was in 1944 that the Council's finance program became of age. In that year, after consultations with and approval by all branches of the cotton industry, what is believed to be the most equitable method of distributing support of the organization was worked out, whereby all segments would contribute an amount in proportion to their respective equities in the crop.

For the crop year 1945-1946, the program used called for a spinner contribution of 5c per bale of cotton consumed; a merchant contribution of 2c per bale of cotton merchandised; a broker or commission buyer contribution of ½c per bale on cotton handled; a warehouseman contribution of ½c per bale on all cotton and linters shipped; a crusher contribution of 5c per ton of seed crushed; and a producer contribution of 10c per bale of cotton ginned, with the ginner serving as collecting agency as his contribution to the program. Participation in the program, of course, has been, and, is today, voluntary, with the basis for each segment's participation worked out and approved by each interest concerned.

Today the sign-up program with the spinner interests is handled entirely by the American Cotton Manufacturers Association, with 3c per bale collected being remitted to the Council and the remaining 2c per bale to the Cotton-Textile Institute for a special promotion fund covering its joint promotion program with the Council.

The present program has been tried and proved. It is past the experimental stage and is familiar to the great majority of cotton people in this country. While we cannot claim anything like 100 percent cooperation, we are considerably past the halfway mark, and progress continues each year toward that goal.

Program Expanded

The success of the Council's finance program during the past few years has meant a greatly expanded program, and the necessary personnel to do the job efficiently. Analyzing the system under which we operate today, I would give as principal reason for the success of the support program, the fact that from the very beginning, the National Cotton Council has had the active participation of the best brains in the industry, and the full cooperation of all cotton interest organizations. The Council's program has never deviated from its original objective—to increase the consumption of cotton and cottonseed products.

It is amazing to one as new in the Council as I am to note what little change has been necessary in the original by-laws under which the organization operates. Of course, there have been amendments. But careful study will show that they have been minor. When we consider the extent of activities covered today in relation to 1939, we realize that the founders were men of great vision and ability—men who gave painstakingly of their talents to make of this an efficient and permanent body with a continuing program, representative of the industry as a whole.

The by-laws of the Council provide that every issue must be supported by two-thirds of the voting delegates of each interest, each interest voting separately. It follows that one more than one-third of any one interest voting against a proposal automatically kills it. This procedure protects the welfare of each interest and assures the cooperation of every segment of the industry on all matters of policy. The fact that the industry must be united on every question before the Council can take a position has prevented even the slightest misunderstanding and has meant that on every major problem requiring support of the industry, the Council has been assured in advance of overwhelming support of the millions of people dependent upon cotton for a livelihood.

How It Operates

It is not possible in this brief informal discussion to give you a full report of Council operating procedure. As I have indicated previously, however, ours is a delegate body representing the six raw primary cotton interests. At present there are 244 delegates, who meet once a year and formulate and approve the organization's program for the ensuing year. Delegates are selected by their own interest organizations for a 3-year term, with one-third elected each year. It is this delegate body that sets the budget each year, from funds collected the previous year. Under this system the Council never has, and, never will operate in the "red." Delegate members, by interests, select representatives to the board annually, each interest having five members. The officers: the chairman of the board, a president, three vice presidents (one from each area), a treasurer and the executive vice president are elected annually by the directors.

The Council has had only two presidents. Mr. Johnston served in dual capacity as chairman of the board and president until this year. When in Atlanta he asked to be relieved of the presidency and was succeeded by Harold A. Young of Little Rock, a prominent planter, one of the founders, and the man who made the motion at the organization meeting which brought the Council into being. Mr. Johnston, of course, is continuing as chairman of the board.

The Council's program is executed through four major program divisions: production and marketing, utilization research, sales promotion and foreign trade. In addition, an office in the nation's capital represents the industry in Washington, on all legislative matters and in its dealings with government agencies and as liaison with other organizations on matters of mutual concern.

It is on the Washintgon scene that we have had closest contact with your splendid group. Our executive vice president, Rhea Blake; Washington representative, Bob Jackson; and others of us have had occasio

• The six primary raw cotton interests by working shoulder-to-shoulder and with the help of the best brains of the entire industry have promoted a highly integrated program for King Cotton.

during the past few years to work closely with Mr. Walley, Mr. Strayer and Mr. Roach and other members of your board in the interest of remedial margarine legislation. No one knows better than the Council what effective work they have done, work which has strengthened margarine's position tremendously and which makes sure the eventual victory in this great fight.

The Council feels that it was most fitting for you to meet in the South this year. We like to feel as if we are at least partially your hosts. Cotton and the soybean industry have much in common. We know that in our more diversified cotton program in the South soybean production has an important place. Your industry complements and supplements cotton production, and it is not unusual to note cotton and soybeans side by side on good land that once was entirely planted to cotton. Yields in the valley area show the wisdom of this multiple crop system, and cotton welcomes the soybean South.

We welcome all of you to Memphis, particularly those from without the Cotton Belt, and we hope you will enjoy your stay here. Cotton's richest heritage is the people it supports. We want you to meet them and them to meet you.

This great meeting can well cement a relationship between cotton and soybeans which will be mutually beneficial to the millions of Americans our respective organizations service. I believe it will.

Activities of the FOREIGN TRADE DIVISION *of the National Cotton Council*

By READ DUNN
Director, Foreign Trade Division

THE PURPOSE of the foreign trade division of the National Cotton Council is to promote the export of cotton and cotton products.

This purpose is born of the belief that unless we act with intelligence and dispatch competition at home from other materials and abroad from other cotton and synthetics may cause us to lose part, if not all, of our foreign markets, thus forcing an adjustment in the economy of the South which it could not easily stand. It is fostered by the firm belief that through careful planning and skilled promotion we can help to recapture at least a good part of our former trade and possibly even expand it.

If, for instance, export markets for cotton were cut off entirely and the South were reduced to producing only for the domestic markets which, let us say, would take from 8 to 9 million bales of cotton annually, production, of course, would have to be geared to that level instead of the 15 million bales now estimated for the current season. Control would have to be exercised to limit the production to the demand.

What then would happen to the acres that are now being devoted to cotton above that required for domestic consumption? On the basis of present crop expectations, 40 percent of these acres now devoted to cotton would have to be planted to some other crops in order to provide sufficient income to maintain the economy.

For what might this acreage be utilized? The first and most logical one, as all of you in this room know, is soybeans. Soybeans at the present time are the crop most nearly competitive with cotton throughout many of the Southern states. Cattle and dairy products are other possibilities; these lands could be turned into pastures, 12-month pastures in many sections, which sustain a larger number of cattle per acre than most any other pastures in the whole U. S. Neither of these courses, however, is desirable.

We all admit that it is much preferable to allow the farms to continue producing cotton and not to cause undue competition with the rest of the country. If, however, the South cannot produce cotton profitably, it will, of course, turn to the production of these other products. What that competition might lead to, it is rather difficult to predict at the present time. The South wants to stay in cotton. Its people have a tradition in cotton production. They like cotton. What we are trying to do is keep the market open for cotton to expand these markets so that the South can stay in its own cotton field.

The way in which the foreign trade division seeks to obtain the objective of promoting foreign markets is two-fold:

1. Research and
2. Direct promotion.

The research programs carried on by the foreign trade division are designed to develop information on market opportunities, problems, competition, etc. and the economic forces operating in these markets which point future trends in the distribution and consumption of cotton. A brief description of some of the studies which have been made will possibly illustrate this point.

● The Cotton Council is working on a long-range program to promote cotton consumption here and abroad and thus keep the South's acres in cotton.

Immediately after the war when the world was faced with the greatest need for food and fibers ever before known in history, the world carryover was at an all-time high of almost 28 million bales. Yet in face of this great need at least 20 percent of the world's spindles were standing idle, largely in the occupied countries of Germany and Japan where those industries had been brought to a standstill by the war; and the mills in Europe, particularly, were turning slowly because their depleted resources didn't enable them to buy enough cotton.

The object was to use the surplus cotton to get the spindles turning again to clothe the naked of the world. The problem was how to finance this movement. One of the first studies undertaken by the Council was made in Germany immediately after the war, with the cooperation of the Army, in an effort to devise a plan whereby these spindles could be reactivated, the cotton consumed and the cloth produced. On the basis of these studies and their recommendations, after months of promotional work with the government agencies in Washington, a plan was subsequently evolved whereby cotton would be furnished on credit to be processed into goods with part of the goods sold on the open market to repay the initial cost. The first of this cotton was supplied from the stocks of the CCC. Later, when the CCC stocks were exhausted the plan was changed slightly and credit provided by private banks, cotton shippers and the Export-Import Bank. Similar studies were then made in Japan where a like plan was developed and placed into operation, after many more months of continual promotion and negotiation in Washington.

Problems of Europe

Soon after the first investigation in Germany was completed the study was continued into the rest of Europe in an effort to find out in more detail what the problems were in other cotton consuming countries as a result of the war. We, of course, knew that spindles had been destroyed, that the purchasing power of these countries had been depleted by the terrific damage of the war. We knew that the normal channels of trade had been disrupted, that many of the people who carried on this trade

were no longer alive. But none of us knew exactly the details of these problems or how to solve them. Individual investigations were made of these conditions in 13 principal countries of Europe. These studies revealed that the primary problem of all these countries was the inability to finance the cotton which they so desperately needed.

The foreign trade division then shifted into the second part of its efforts and began the promotion of credits to enable these countries to buy the cotton required for their recovery. After long negotiations with the Export-Import Bank of Washington the Council was finally able to persuade that institution to establish a general line of credit especially for cotton for a special group of European countries. These were all short-term, liquidating credits which are now being paid off.

Another economic study of the same general type was also made in China in an effort to ascertain the problems facing China in the re-establishment of its raw cotton production and also in rebuilding its cotton textile industry in order to supply the country's basic demands for clothing. The Council's recommendations for Chinese cotton aid under special programs last year and now under ECA were developed from this study.

Problem is Dollars

In short, the problem of the consuming countries so far has been lack of dollars and we have concentrated all our efforts on working out ways and means of financing them, to move the cotton, and reestablish ourselves in the market. To this end we went all out for the Marshall Plan and put on a major campaign all over the South by letters, speeches, press, radio and contacts of all kinds with Congress.

Another series of foreign trade division studies is now in progress in the cotton producing countries of the world in an effort to develop the economic information regarding price, quality and volume competition which these countries offer today and which they may offer the U. S. in the future. Since Europe's problem in acquiring hard currency exchange with which to buy cotton from the Western Hemisphere has become so acute, rumors have been rampant to the effect that the English, French, and Belgians are planning to push cotton production in their own African colonies to supply cotton for their own mills in their own currencies. The rumors had quoted figures of possible expansion in Africa in the next few years of as much as 2 million bales. Such a development, of course, would be a very serious blow to U.S. cotton exports in the future.

In order to develop intelligent local as well as national policy for cotton production and exports it was necessary that our people know the possibility of such competition developing and the probable time period involved. For this purpose the foreign trade director made an extensive trip through all of the principal cotton producing colonies of Africa. Complete reports on present and prospective production of all these countries are now ready for publication. Incidentally, these reports show in general that because of the scarcity of labor and low state of the education of the people, the high incidence of pests and diseases common in all tropical areas, and the poor quality of the soil combined, it appears improbable that any large expansion of cotton production in Africa is imminent. It is possible, of course, in the more distant future, say 25 to 50 years from now, but not immediately.

Another very real question was being raised as to the competition that would be offered by Pakistan and the Dominion of India where it was reported cotton exports would be encouraged in an effort to raise foreign exchange to finance improvements desired by the newly created governments. Undivided India was offering for export annually a larger volume of cotton than any other country outside the U. S. Though previously this cotton had not been directly competitive with that produced in the U. S. because of its shorter staple and harsher character, the quality has been improving rapidly and as a result the competition is becoming keener and keener. The foreign trade division studies were extended to both Pakistan and India for the purposes of developing all the possible information regarding the competition which might be expected from those two countries in the future. A study of the conditions found in these two countries is now being prepared for publication to the trade.

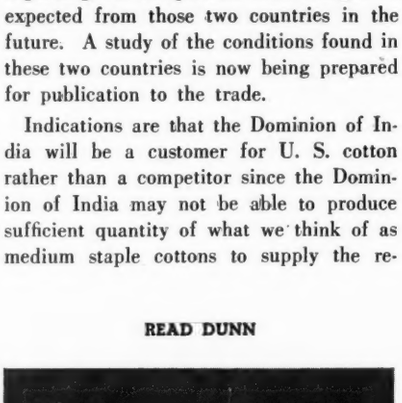
Indications are that the Dominion of India will be a customer for U. S. cotton rather than a competitor since the Dominion of India may not be able to produce sufficient quantity of what we think of as medium staple cottons to supply the requirements of the rapidly growing textile industry.

Pakistan, on the other hand, has enormous possibilities for future development of cotton production with the largest irrigated area for cotton in the world and possibilities for further extension of irrigation. Pakistan may very well offer new competition to the U. S. but again it will probably be in the distant and not near future as new irrigation facilities will first have to be constructed.

These studies of competition will be continued in South America this fall in an effort to get similar information on Brazil, Argentina, and the other cotton producing countries below the equator in the western hemisphere. An investigation of Mexico has already been completed and reported.

All our research on present and prospective competition has indicated that consumption is likely to expand as rapidly as production and that we do have real opportunities to export cotton in competition with other countries, if we can keep our prices in line through mechanization, etc., if we can continue to keep one jump ahead of most competitors on quality and, paramount, if we can help create dollar exchange with which our customers can buy our cotton. In this effort, we are trying to work with all the other national organizations interested in expanding foreign trade to formulate and promote policies to increase our imports of goods and services that will supplement and complement our own resources without causing any undue hardship on our own domestic industries, and to promote the development of such resources in other countries for import here. We have done something along this line but we must do more, much more—if there are to be enough dollars in the world to permit these countries to buy our commodities.

READ DUNN



Worldwide Program

The other type of research in which the foreign trade division is engaging at the present time is a statistical reporting of supply, distribution and consumption of cotton by countries by growths over the world. The purpose of this service, of course, is to provide market information for the assistance of the individual shippers and also information which will serve to aid in planning national and international programs.

For instance, at the present time these data are being used in the work with ECA for determining the cotton requirements in volume and quality for China and the countries under the Marshall Plan. When the Council instituted the service there was no other agency providing similar information on cotton. There had been some such services before the war but they had all disappeared. Now the International Cotton Advisory Committee has come into being and is attempting to provide the monthly and quarterly statistical service of this nature, we will probably merge our work with theirs

in order to reduce our expense and devote our energies to economic analysis.

In the broad field of economic analysis, the foreign trade division has also been delving into the broader aspects of consumption and demand in an effort to learn more about the whys and wherefores of consumption of cotton, especially to determine the elasticity of cotton marketing and to discover the places in which we might conceivably increase consumption by intelligent promotion. As an illustration, we recently concluded a study in Canada which indicated that the Canadian people though having a standard of living measured in real income per worker almost equal to that in the U. S. had a per capita consumption of cotton only two-thirds of what it is in this country. Though it is a colder climate we found by very detailed studies that the greatest difference in consumption was not accounted for by the substitution of wool for cotton but by the fact that the people simply did not buy as many articles as they do in this country, of clothing, household and industrial fabrics.

Study in Canada

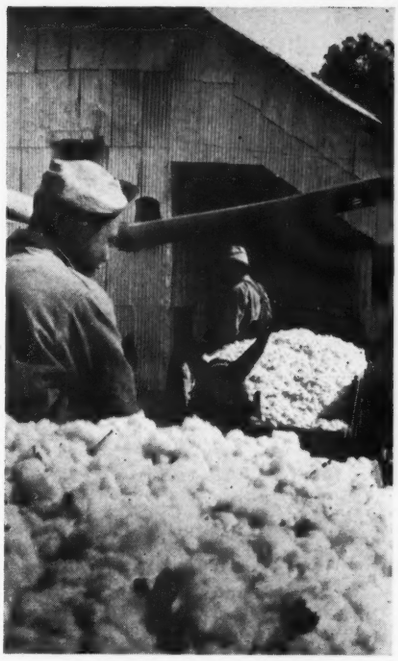
This study led to a series of discussions with the textile and manufacturing associations in Canada looking toward promotion of cotton products in an effort to increase consumption. Looking toward meeting competition, a natural promotion for the colder climate for instance is the new tightly woven cotton fabrics on the order of the windbreakers used by the armed services so extensively during the war. These fabrics, it has been shown, weigh only a fraction of a wool fabric to provide the same degree of warmth.

In this broad field of market elasticity which must be taken into account in planning long range programs to expand cotton consumption, we have been analyzing the effect of industrialization on cotton consumption, especially in some of the near countries of Latin America which have undergone recent industrial revolutions. Preliminary information indicates that some of these countries have actually expanded their per capita consumption of cotton as much as 20 percent in the short space of a few decades for two reasons:

1. The larger industrial plants have themselves used much larger quantities of cotton; and

2. The employment given to the people has served to raise the standard of living of those countries creating a broader demand for consumer goods.

In the case of the cotton producing countries this might serve to divert their cotton from export markets into the domestic mills, thereby decreasing competition. This is actually taking place not only in South American countries but in many of the African colonies today. In the case of a non-cotton producing country, this industrial development might of course create a broader market than existed before. These studies in elasticity of demand and possible expansion in consumption also indicate changing patterns in trade which are very important for over-all and long-term planning, not only for the trade itself but for the government.



At Memphis you are deep in cotton country. This is a cotton gin on a plantation near Memphis.

This in a general way may serve to illustrate the type of research in which the foreign trade division is engaging and the way in which this research material is used to promote exports of cotton and cotton products.

In cottonseed oil and meal the division has served as Washington liaison for the crushers, keeping in contact with the various government agencies having to do with exports of oil, especially allocations and helped promote programs determined by the industry to be expedient. In the future we hope to do more research and promotion in oils in foreign trade and would like to work with the American Soybean Association.

Naturally in both aspects of this program —the research and promotion—it is necessary to stay in close contact with all the agencies of the government, especially those in Washington having to do with production, trade, commerce, financing, etc. as well as with the same agencies in the foreign countries, not only to help in the long range problems but in the immediate day-to-day problems which are always with us. With this background of information, broad knowledge of world conditions affecting cotton, members of the division are constantly in consultation formally and informally with these agencies. Recently representatives of the division have been formally attached to the War Department, Commerce Department, Department of State, Agricultural Department and ECA at one time or another in the capacity of special advisors.

Since these broad programs often involve national policy it is equally necessary to keep a close liaison with the other organizations serving agriculture and private agencies interested in foreign trade. Since it is often necessary to resort to legislation to authorize or finance recommended programs, a close contact with Capital Hill is paramount. We have been able over the period of years to develop a very close working relationship with many of the cotton leaders in Congress which has proved most valuable. As a result, during the legislative session hardly a day passes that some Senator or Representative does not call to ask for information on some aspect of foreign trade in cotton, generally pertaining to some legislation. During the last session as many as 18 and 20 Southern Senators assembled on several occasions to hear reports on the cotton and textile situations in foreign countries.

By continuing these efforts we hope to be able effectively to promote the increased consumption of cotton and cotton products here and in the markets of the world in order that we may sustain the level of our production in the Southern states and not have to take our acres out of cotton and put them in soybeans or something else.

Offer to Cooperate

If the American Soybean Association decides to establish a foreign trade division, we certainly would like to cooperate. The basic problems impeding expansion of foreign trade in cotton are common to soybeans and to all agricultural commodities in general, more than to some of the manufactured products in which the United States has little or no competition. If agricultural commodities, including cotton and soybeans are to be exported in the future in any significant quantities, I am sure that foreign purchasing power must be increased. If foreign purchasing power is to be increased, I am sure it will be only through the careful planning and diligent efforts of all the groups and agencies in this country working together. We in cotton certainly welcome the assistance of American Soybean Association.

—s b d—

BRAZIL PRODUCTION UP

Sao Paulo's (Brazil) 1948 oilseed crops, except cottonseed are greater than in 1947, reports USDA's Office of Foreign Agricultural Relations. Sao Paulo produced a record soybean output of 52,000 bushels compared with 44,000 in 1947.

Normally Rio Grande de Sul accounts for the greater part of this crop, but indications are that dry weather has reduced the outturn by one-third. In 1947, production for all Brazil was 220,500 bushels.

FOSTER D. SNELL

Synthetic Detergents

AND THEIR EFFECT ON VEGETABLE OIL USAGE

By FOSTER D. SNELL
Foster D. Snell, Inc., New York City

IN EVERY grocery store one finds soaps and synthetic detergents side by side competing for the consumer's dollar. Industrially the salesmen for synthetics either follow or precede the salesmen for soaps and sulfonated oils. Today all the fats and oils produced can be sold. What about tomorrow and tomorrow?

The trend of our civilization has been definitely toward the synthetic materials to replace natural, since the replacement of natural indigo by synthetic. Many facts are available to show present conditions and recent trends. Let us look at the composition and properties of those products which have gained a dominant commercial position, in terms of how they are produced, and the availability and cost of their essential raw materials, and then try to look ahead for the next few years at least. As made in this country, the large-scale synthetics draw on one of two sources of raw materials—natural oils and fats, or petroleum.

Official government figures on production of synthetic detergents made from the two sources of raw materials are tabulated, together with estimates for 1947. The latter figures are not official but are obtained from a canvass of the trade. Soap production as reported from about 90 percent of soap manufacturers, were obtained from the Soap and Glycerine Producers' Association, and are included for comparison.

Detergents Based on Oils and Fats	Production in Pounds	
Product	1945	1947
Soap	2,859,000,000	2,792,000,000
Alkyl sulfates and Sulfated monoglycerides	29,000,000	49,000,000
Sulfated Amides and Sulfuric Esters of Amides	9,000,000	12,000,000
TOTAL	2,897,000,000	2,841,000,000
Total Synthetics	38,000,000	61,000,000

Detergents Based on Petroleum	Production in Pounds	
Product	1945	1947
Alkyl aryl sulfonates	65,000,000	150,000,000
Alkyl sulfonates	11,000,000	30,000,000
TOTAL	76,000,000	180,000,000

The figures show that soap production is tremendous in comparison with synthetic-detergent production, but that the latter is increasing rapidly, particularly for petroleum-base detergents. And in 2 years while synthetics from fat sources increased 60 percent, those from petroleum increased at over double that rate. All of the products listed have something in common with soap in that, like soap, they are anion-active.

Soap is limited in its use by being effective only above pH.10 and only in water free from alkaline earth ions — in other words in soft water. In contrast the synthetics commonly perform better in hard than in soft water and have no serious limitations as to alkalinity or acidity.

These products—and for the present we will limit our discussion to those in the table—have fair to good detergent properties, which in each case requires a delicate balance of polar and nonpolar groups. The nonpolar groups are commonly long chain hydrocarbons frequently termed alkyl although in this connection chains of less than nine carbons are usually excluded. The water-insoluble radicals are counterbalanced by solubilizing groups which are primarily sulfonate, $-SO_3Na$; or sulfate $-OSO_3Na$. Other groups and other factors may be introduced to influence solubility; for example, unsaturation in the molecule increases the solubilizing effect.

Alkyl Aryl Sulfonates

Of the detergents based on petroleum, the alkyl aryl sulfonates are by far the most important and are reported to have now reached more than twice the production of all other synthetic detergents made in the country. Commercial examples are Nacconol—also branded as Swerl-Santomerse, and Oronite. They are the sodium salt of keryl benzene sulfonate, $RC_6H_4SO_3Na$, or in some brands Toluene made from petroleum replaces benzene. The chain length of the alkyl group, R, should be an average of C_{11} -C_{14} which is about what is present in a closecut kerosene fraction.

Kerosene may be chlorinated and reacted with benzene in the presence of aluminum chloride as catalyst, or the equivalent reaction may be carried out with an unsaturated hydrocarbon. After distillation of the reaction product in vacuo, the distillate is sulfonated to give monosulfonate, which in turn is neutralized to give the sodium salt. Excess sulfuric acid left from sulfonation is partly separated and the balance neutralized, which gives a final product containing about 60 percent of organic detergent and 40 percent of sodium sulfate.

For many industrial uses this is built further to give a final product containing one-third organic compound and two-thirds sodium sulfate, which has nearly the same detergent power as it would have if it were all synthetic organic detergent. When the detergent is intended for domestic sales, further building from the 60 percent of active agent is often made with other salts.

Such synthetics because of the high builder ratio are roughly in the same price class as soap. They are more effective on wool than on cotton goods unless corrected by special building for that service. So they do not seriously touch the large laundry market. Primarily they are less effective detergents than soaps but offset that by usefulness in hard water so that they are good general cleaners. Sales of 5,000 pounds a week have been built up in recent months in a city of a half-million population solely to the quarter-in-a-slot laundry machines.

Alkyl Sulfonates

Sodium alkyl sulfonates represent an inexpensive type of detergent made from a petroleum fraction by reaction with sulfur dioxide and chlorine, followed by neutralization with sodium hydroxide. The formula

may be written RSO_3Na, in which R, the alkyl group varies in chain length, with probably an average of C_{12}-C_{14}. The main representative of this type is MP 189. They are much like alkyl aryl sulfonates but somewhat poorer detergents, and the raw materials are inexpensive and available. German production of this type was substantial during the war.

Alkyl Sulfates

The alkyl sulfates were among the first synthetics made on a large scale and paved the way for the great broadening of the field which has occurred since. These, sometimes termed fatty alcohol sulfates, reached commercial success in the 1930s. In the formula, $ROSO_3Na$, R is an alkyl group having a chain length averaging about C_{12}, connected to an oxygen atom rather than to sulfur as in the sulfonates. Coconut oil is the fat source most used, as having the desired average chain length. Examples are Orvus WA and Duponol, the active agent in Dreft. Manufacture involves more steps than are needed for making soap and uses about the same raw materials. The oil is reduced to the fatty alcohol either by high-pressure hydrogenation with a catalyst or by sodium reduction. The alcohol is then esterified with sulfuric acid which in turn is neutralized with caustic soda, giving the final sodium alkyl sulfate. As with the alkyl aryl sulfonate some sodium sulfate is produced as a natural step in manufacture. The cost of the active detergent is offset by building with about 75 percent of other ingredients. This type also requires correction in building to give good detergency on cottons.

Currently a highly successful commercial product in domestic sales, Tide, contains about 25 per cent of alkyl sulfate, built with sodium sulfate, a polyphosphate, and a few percent of carboxy methyl cellulose. This compounded material is said to be a better detergent than soap for washing cotton. Alkyl sulfates are more resistant to hard water than alkyl aryl sulfonates but less resistant to acid.

There is indication that the petroleum industry may take a part at least of this field. In Britain secondary alkyl sulfates are made on a large scale from petroleum by a Shell subsidiary. In Germany fatty alcohols and fatty acids have been produced synthetically by the Oxo process, using synthethic hydrocarbons as starting materials, but good-quality materials are expensive to make. The hydrocarbons themselves are made by polymerizing the lower gaseous olefins, or from water gas by Fischer-Tropsch synthesis. Some American refiners are in the process of building plants to produce such olefins, but fatty alcohols from this source will probably not be available for some years.

Sulfated Monoglycerides

Somewhat similar to the alkyl sulfates in character and properties are sulfated monoglycerides or acyl glyceryl monosulfates, $RCOOCH_2CH(OH)CH_2OSO_3Na$, in which R is an alkyl group with an average chain length of about C_{12}. An example is Arctic Syntex M present in Vel. The triglyceride is converted to monoglyceride by technics familiar to the food industries and then the sulfuric ester formed. The fat stock used is normally coconut oil. Building is much like that practiced with the alkyl sulfates. Instability in strongly acid or alkaline solutions results from the ester linkage.

Sulfated and Sulfonated Amides

An excellent detergent which gives a voluminous, stable, and fine-textured foam is an amide made by the condensation of oleyl chloride with methyl taurine. The sodium salt, called Igepon T, has the formula $C_{17}H_{33}CON(CH_3)CH_2CH_2SO_3Na$. This type of product is in some properties a better detergent than the alkyl sulfates but it is expensive both in terms of raw materials and in processing. Other products in this general class are Alrogel, Oratol, Caramid and Soapotol.

Although various fatty materials may be used, oleic acid is most suitable to give a detergent for the textile industry, for washing both cotton and wool. Fatty acids with shorter chains are more soluble than the oleyl derivative and higher in foaming power, which makes them acceptable for domestic use, although actually their detergency is not as great as with the oleyl compound. Coconut and palm kernel oils have been used for making such products. The amide derivatives may contain up to 80 percent of builder, mostly sodium sulfate.

Nonionic Agents

As implied by the name, solutions of these agents do not ionize. Usually several ether-oxygen, hydroxy, or both groups are predominately at one end of the compound as in the polyethylene oxide type. For example, Tween 80 is a polyoxyalkylene derivative or sorbitan monooleate. This particular product contains an oleate radical and so draws on vegetable oils for raw material. Renex, Triton X100, and Glim are nonionic detergents. Many of the nonionics are emulsifying agents only, but a few have been developed with good detergency for washing both cotton and wool. One of these which does not draw on fat stocks for raw materials, is being used extensively in commercial laundries. Another is popular for dish washing.

The latest figures show less than 2 million pounds production in 1945 but one plant is believed to exceed that now. The limitation on their production is capacity to produce ethylene oxide, used in nearly all of them. Strictly speaking the fatty monoglycerides used largely in foods are in this class but are not considered here because there appears to be no reason to expect encroachment from the petroleum industry.

The nonionics are expensive, and cannot be built with inorganic salts to reduce cost. As now sold they are generally liquids or soft waxy solids, in contrast to the anion-active detergent products discussed, all of which are produced in granular or flake form. An attribute of the nonionics is that they do not dry out the skin as much as do some of the other synthetics. Tween 80 and Renex increase the detergent ability of alkyl aryl sulfonates in washing either cotton or wool fabrics,[1] and so make desirable combinations.

In The Future

Modern methods of processing and refining vegetable oils have greatly reduced the difference between nonedible and edible grades. With the present world shortage of fats it is to be expected that oils for edible purposes will have a priority over use for manufacture of more than a minimal amount of soap and synthetic detergents. Past experience indicates that any field in which a tremendous amount of research is carried on by competitive groups, results in greater use of all types of products in the field. Because so much work has been conducted within the last 10 years on detergents and other types of surface-active agents, such products appear in formulations in which their usefulness was not recognized before. Even soap has new uses, for example in emulsion polymerization of synthetic rubber.

Statistics show that consumption of edible oils in a country has run more or less parallel to soap consumption; the amount of soap used per person can be taken as a criterion of the general standard of living. Future statisticians will need to compare detergent consumption rather than only soap.

More fats and oils are needed to feed the

● Synthetics occupy a relatively small but rapidly growing sector of the soap field. The author has headed the firm of consulting chemists and engineers bearing his name since 1930.

[1] G. E. Barker, SOAP AND SANITARY CHEMICALS 24, No. 6, 46-8, 66 (1948)

world because of the increase in population, which is about 8 percent since 1939. In addition, countries having a very low standard of living can be expected to improve this slowly and gradually. A very slight increase in the *per capita* consumption of oils and fats may be expected. For example, a number of areas in the tropics which have been large exporters of fats and oils will have less to export, with increased consumption inside their own countries. This is illustrated by an average production of fatty oils in India in 1937-39 of 1,809,000 metric tons per year, with exports of 470,000 tons per year. In 1947, production amounted to 1,700,000 tons but exports were only 80,000 tons. This change was caused mainly by increased population but also by a very slight increase in *per capita* consumption.[1]

This general picture indicates that there will be a shortage of edible fats and oils for several years to come so that the amount available for making soap and oil-based detergents is not likely to increase greatly. The need for larger amounts of detergents will be met by greater production of synthetic detergents based on petroleum and gaseous olefins. And many of the traditional markets for sulfonated oils have turned to the use of synthetic detergents.

The present effort seems not so much to try to produce new types of detergent compounds as it is to build the synthetics already in large-scale production with other products, to increase general detergent efficiency. As already mentioned polyphosphates and cellulosic derivatives are very promising in this respect for building anion-active agents. Also combinations of anion-active detergents with nonionic detergents show both increased solubility and increased detergent power. Synergism among compatible synthetics is therefore a highly promising field.

A straw in the wind indicative of the trend is that the three major soap companies each have two brands of synthetic on the shelves to compete with their own soaps. Two of the soap companies have products containing synthetics derived from petroleum. One is test marketing a synthetic bar which looks like soap but gives an entirely different feeling on the skin. Another synthetic bar of solidified nonionic is ready for test marketing.

This year for every pound of synthetic sold there will be 5 pounds of soap. A few years ago the ratio was more favorable to soap and one did not dare predict the present large synthetic production. A few years hence this ratio of synthetics will be even greater. That's the trend.

[1] F. H. Braybrook, CHEMISTRY & INDUSTRY 1948, 404-7, 409.

The Memphis Merchants Exchange

By A. A. WILLIAMS

ONE DAY in May a little more than 400 years ago, the Spanish explorer, Hernando DeSoto, and his intrepid band of followers emerged from the forests atop the Chickasaw Bluffs and first glimpsed the Father of Waters, the mighty Mississippi River.

DeSoto must have viewed with fascinated eyes the scene before him. It is a pleasing fantasy to speculate on the thoughts which coursed through his mind. He must have felt that this river would be associated forever with his name; that this stream more stately than any of the rivers of his land across the sea would someday be world-famous. Did he visualize the cities which would adorn its shores and the commerce which would be carried upon its bosom? Could he hear the haunting strains of music telling stories in song of this mighty stream? Did it awaken a dream of the future, of a great city far surpassing those of the Old World?

If so, then indeed his dream has become a reality, for upon the site of his discovery has arisen within 4 short centuries a modern Memphis far beyond his fondest dream or most vivid imagination, Memphis—the Place of Good Abode.

But cities do not just happen. They are the result of men who dream and plan for greater things. Some of the men who have made Memphis the great city she is were the very men who planned and created one of its finest institutions. On January 11, 1883 a group of 95 business men banded together to organize the Memphis Merchants Exchange. On February 1 of the same year, the Exchange began to function actively. In the annual address of President John K. Speed at the close of the first year, it was pointed out that the membership had grown to 175, and that the interest shown by Merchant members justified the statement that the Exchange was no longer an experiment but a necessity; and must become a permanent institution in Memphis. In 1884 a charter was granted. Thus through the efforts of a few men of vision and enterprise there was born an organization which has grown and developed into one of the leading Exchanges of our country.

A. A. WILLIAMS

Time will not permit a detailed discussion of the many uses, functions and advantages of the Exchange. But I feel that I should be remiss in my duty if I failed to acquaint you with some of the outstanding services. In connection with the Memphis Merchants Exchange there are in operation two subsidiary organizations known as the Memphis Hay and Grain Association and The Clearing Association. Each of these subsidiary organizations has its own officers.

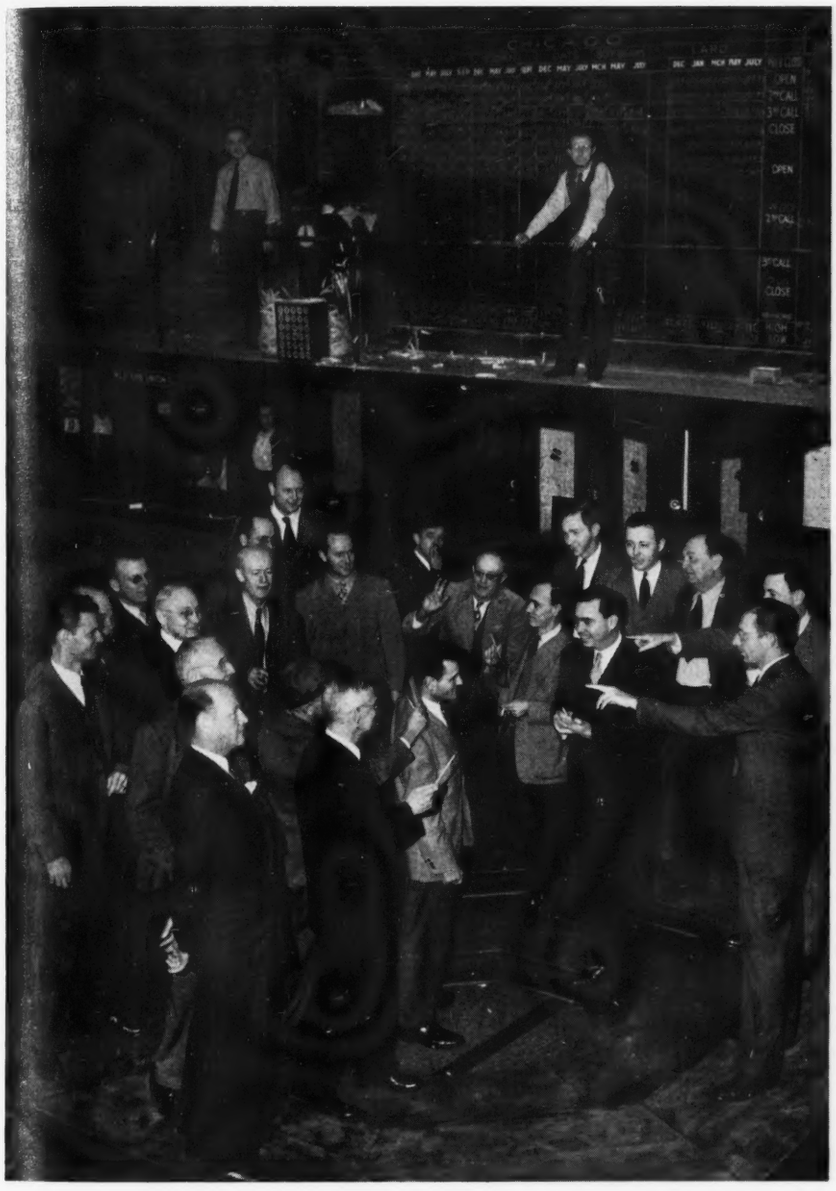
The Memphis Hay and Grain Association membership is made up of those who are actively engaged in grain or formula feed business. It maintains a traffic department for handling rate and other traffic matters which affect the Memphis market and trade area. The Hay and Grain Association also supervises the work of the inspection department.

Clearing Association

The Clearing Association supervises the trading activity of the cottonseed meal and soybean oil meal futures markets.

All of the services of the Memphis Merchants Exchange are highly personalized. Therefore, the employee personnel of the Exchange is made up of men and women of outstanding qualifications in their respective lines of endeavor. Some of them have made their positions with the Exchange their life work, never having been engaged in any other line of activity.

The Memphis Merchants Exchange in-



—Photo courtesy Feedstuffs

Trading in soybean futures on the Memphis Merchants Exchange.

● Memphis Merchants Exchange has been in operation for 65 years, is the only futures trading market on soybean meal in the world. Author is president of the Exchange and partner in Happy Mills, feed manufacturers at Memphis.

spection department, under jurisdiction of the United States Department of Agriculture, is staffed by a capable crew of inspectors and samplers under the guidance of a chief inspector. Our chief inspector has held the position for more than 26 years and has been president of the Chief Grain Inspectors National Association for the past 2 years, which speaks volumes for his ability and qualifications. The United States Department of Agriculture maintains a federal grain supervision office at Memphis and this furnishes added protection to both buyer and seller, where any question may arise relative to grain or soybeans.

In the preamble of the original rules and regulations of the Memphis Merchants Exchange the founding fathers stated that their wish was to "acquire, preserve and disseminate valuable business information." This has always been one of the chief functions of the Exchange. Direct wires to the leading trading centers of the world transmit in a flash the latest quotations, as well as news items affecting the price structure of all commodities and securities. This information is available to all members. Member brokers, jobbers and commission merchants are in constant contact with producers, processors and sellers of grain and feed materials on the one hand and buyers on the other, serving both with information regarding quotations and prices, which creates a more intelligent and efficient trading procedure.

At the time the Memphis Merchants Exchange was founded one of the most important industries of the city was the manufacture of cottonseed oil. There were 10 mills in operation with a daily crushing capacity of 620 tons of cottonseed. Up until this time the by-product cake and meal had been largely exported to Europe; but one of the first functions of the Exchange was to direct attention to the value of cottonseed meal as food for livestock. Domestic use of cottonseed meal and cake had grown to such proportions by the close of the first World War that it was decided by the Memphis Merchants Exchange to establish a cottonseed meal futures trading market. This was done in October 1929, and is the first and only one of its kind in the world.

Meal Futures

With the rapid growth and development of the soybean industry, it was felt that a futures trading market on soybean oil meal should be established. On July 8, 1940, the Memphis Merchants Exchange brought into being such a market, which was another "first and only" for the Exchange. During the second World War the use of the futures market was naturally restricted by price curbs and governmental edicts; but since the War trading practices have gradually returned to normal and a steady and healthy growth in volume of trades is being experienced on our futures exchange.

The officers of the Exchange are elected yearly. They are chosen for their interest in the welfare of the Exchange, the city and the nation. Across the years these men have come, signifying by their actions, their devotion to the things which make of this world a better place in which to live. By example, they have set a high standard of accomplishment which those of us who fill their places now and those of the future must consider a sacred trust.

In the spirit of the men who have contributed so much to make the Memphis Merchants Exchange a great institution and on behalf of the present membership, personnel and officers, it gives me a great deal of pleasure to extend a cordial welcome to the American Soybean Association; and to invite you to use the facilities of our Exchange while you are with us.

New Developments in INDUSTRIAL USAGE of SOYBEAN OIL

By J. C. KONEN

Research Director Archer-Daniels-Midland Co.

THE SOYBEAN is coming of age. During the early years of its development some described the soybean as a "wonder" crop and a "cure-all" for the problems of both the farmer and industry. Others acrimoniously said that like the horseless carriage, it was not here to stay. Now, after a turbulent early age and adolescence featured by an unprecedented rate of acreage growth for American crops, the soybean is finally attaining maturity and a realistic evaluation of its part in industry can be made.

We now understand that the soybean cannot be used in all industrial products. On the other hand, we recognize in the soybean a highly versatile addition to our national economy. The oil meal gives to the farmer a high protein livestock feed, and it gives to industry a valuable source of industrial and edible protein. Flours obtained by grinding of soybean meal are extremely nutritious. Huge tonnages are shipped to Europe under ERP because they supply a larger amount of essential body-building protein in a given bulk or a given weight than any other readily available foodstuff.

Up until a few years prior to World War II, the usage of soybean oil for industrial purposes was quite insignificant as compared to its use as an edible oil. A severe shortage of linseed oil during the war and an almost complete curtailment of the supply of tung oil, which is supplied primarily by importation, led to a marked increase in the demand for industrial soybean oil. Under government restrictions only a limited amount of the soybean oil output could be used for non-edible purposes, but the quantity available was avidly taken by industrial users. A vast amount of research work was directed at improving the paint and varnish making qualities of soybean oil. This research has continued after the war, and today soybean oil is an extremely important factor in the protective coating industry.

To Better Quality

Concurrently with the intensified research on industrial utilization of soybean oil there has been an equally vigorous program on the improvement of the quality of the oil for edible purposes. The first soybean oil imported into this country from China left edible processors with a decidedly bad taste in their mouths and a marked aversion to soybean oil. Since the initial soybean cultivation in this country in the late twenties and early thirties the processors of soybean oil have produced an oil of incomparably better quality. When edible products based on soybean oil are stored for long periods of time and particularly when they are heated as in deep fat frying, they acquire a rather unpleasant fishy or painty flavor. A large amount of experimental work is being carried out in an attempt to prevent this so-called flavor reversion. Government laboratories, universities and private industry are all contributing and cooperating in the reversion problem and although the final solution is elusive, distinct progress is being made.

Non-Drying Oils

One classification of fats and oils depends on their behavior when spread out in thin films and exposed to air. A group of oils, including lard oil and olive oil, are classed as non-drying; that is, they retain their oily characteristics after long exposure in thin films. A second class of oils, including cottonseed oil and soybean oil, are classed as semi-drying. They set up to give sticky, tacky films but complete drying of the surface requires very long exposure. A third class, the drying oils, of which linseed is the most important member, set up quite rapidly to give hard, non-tacky films.

The semi-drying characteristic of soybean oil led to an early restriction of its use by the paint industry. For instance, it was pointed out that although house paints based on soybean oil had inherently good durability, the softness of the film led to excessive dirt pick-up, and in the Southern states the paints were susceptible to mildew because they would pick up spores and retain them on their relatively soft surface.

On the credit side, soybean oil films have excellent color stability, showing little tendency to yellow on aging. In contrast, linseed oil darkens quite markedly. The non-yellowing character of soybean oil immediately suggested to the paint manufacturer that it be used in light colored interior finishes. For exterior purposes the bleaching action of the sun prevents yellowing, but for interior architectural finishes in which continued good appearance is required, yellowing of the film on aging is most undesirable.

Recognition of the good color stability and economies in its usage led to concerted effort by paint manufacturers to apply soybean oil in conventional varnishes and resins. The most successful and important industrial use developed was in the preparation of oil-modified alkyd resins. These products are prepared by reacting fatty acids derived from soybean oil with glycerine and a dibasic acid. A later development was to use the oil itself without first splitting it into its component parts—fatty acids and glycerine.

The soybean oil-modified alkyds dry rapidly to give films of outstandingly good durability and color retention. Such soybean alkyds are usually a component of the beautiful white finishes on such industrial products as refrigerators, washing machines and stoves. The usefulness of these alkyds does not end with these industrial finishes. They are pigmented to give exceptionally fine architectural enamels for both interior and exterior use. At the present time the preparation of oil-modified alkyd resins offers the most important single industrial outlet for soybean oil, and in the future this usage will undoubtedly be expanded.

Wetting Agents

A second and highly important development in the usage of soybean oil was in the preparation of plasticizers. It was found that by special methods of processing, soybean oil could be made quite soluble in alcohol and also acquired good solvency properties for nitrocellulose. The combination of good solvency, flexibility and lack of volatility led to wide usage of these special soybean oils as lacquer plasticizers.

By modification of the procedure, blown oils are formed which have been widely used in the preparation of caulking compounds and putty. They also serve as excellent wetting agents in the grinding of paints and enamels where good dispersion of the pigment is especially difficult.

Bodied oils are produced by heating of oils at very high temperatures. The oil progressively changes in viscosity from a

J. C. KONEN

thin fluid to a heavy sirupy consistency. In the case of soybean oil this conversion takes an excessively long time and is relatively uneconomical. The development of polymerization catalysts has changed the picture. By addition of small amounts of these catalytic agents, the bodying time is roughly halved, and a bodied soybean oil which required 16 hours of heating can be economically produced in only 8 hours.

A recent development is the production of extremely high viscosity (pregelled) oils by catalytic polymerization at low temperatures. Such bodied soybean oils are excellent for the preparation of flat paints, wall primers and sealers, enamels and house paints. They dry much faster than soybean oil itself to give a harder, tougher film.

Before soybean oil could attain a non-specialty classification as a raw material for the protective coating industry, it was necessary to carry out a large program of scientific investigation on the improvement of the drying properties. The in-between character of soybean oil, which leads to its versatility as a raw material for both industrial and edible purposes, may be regarded as an advantage or a disadvantage, depending on the point of view. However, for a long time poor dry acted as a deterrent to its industrial use. Improvement of the drying properties was attacked on a wide variety of fronts and out of the concerted efforts of oil chemists in private industry and government research laboratories there came forth a variety of modified soybean oils that really dried. These products were not merely as good as something else, they were able to stand on their own merits as excellent raw materials for paint, varnish, linoleum and lacquer formulations.

One of the most obvious and first used methods for improvement of the quality of soybean finishes has been to blend it with other oils of outstanding drying properties such as tung oil. Such blends were used primarily as kettle oils in varnish making. The early method of merely blending or mixing of soybean oil with tung oil has been improved upon so that now products are produced in which there is actually a chemical intercombination of these two oils to give new products which are different from either of the starting oils and which can be used to replace linseed in paint and varnish making.

Give Harder Films

Still more important products are being produced by chemical modification of the soybean oil itself by replacement of the glycerine portion of the soybean oil with synthetic alcohols such as sorbitol and pentaerythritol. These synthetic esters which are produced from the fatty acids or the whole oil set up more rapidly than the natural occurring glycerine ester to give harder, tougher, more wear-resistant films.

In order that you may have a clearer idea of drying comparisons, perhaps it would be well to define the terminology. In order to quantitatively measure the drying properties of oil, two terms, "set-up time" and "tack-free dry", are commonly used. A film is spun on glass and sand is mechanically placed on the film. As long as the oil is wet, the sand sinks in and becomes a firmly bound part of the dried film. As soon as the oil has "set-up", the sand simply lays on the surface. By brushing off the loose sand, a fairly sharp line of demarcation is obtained between the imbedded sand and the portion of the film whose surface had dried. The time required for the film to dry sufficiently so that the sand does not adhere is termed the "set-up time". The applied film is then checked periodically by finger pressure and the time at which the film loses its stickiness or tackiness is termed "tack-free dry".

As an example, soybean oil itself sets up in 16-20 hours using normal driers and although it never becomes tack-free, it has only slight tack after 1 or 2 months. In contrast, linseed oil sets up in 4-6 hours and has only a slight tack after aging for several days to a week. By preparing the synthetic soybean oil-pentaerythritol ester, the set-up time is 3-4 hours, and the film hardens somewhat faster than the linseed oil film.

By treating soybean oil with a chemical known as maleic anhydride, markedly improved drying oils are produced and a combination of the maleinization treatment, as it is called, with the esterification with synthetic alcohols previously described has produced outstandingly fine drying soybean oils. These products dry as well or better than linseed oil and can be used extensively in the preparation of house paints, varnishes and fine enamels. One hundred percent soybean-based products can be formed in this manner which are as good or better than the conventional linseed oil products and which can compete successfully with dehydrated castor oil in varnish making properties.

Three different types of maleic treated products are produced commercially. By treating soybean oil with a relatively low level of maleic anhydride, limpid oils are produced which have given excellent results in house paints. Usage of higher levels of maleic treatment gives products of excellent varnish cooking properties. The varnishes are excellent for the preparation of high quality, color-retentive enamels. A third modification consists in the preparation of maleic treated oil followed by neutralization of the excess acidity with ammonia or alkali. Water-dispersible drying oils are obtained which serve as very fine base vehicles for the preparation of water-thinnable emulsion paints. These new soybean oil products have met with an excellent reception by the paint, varnish and linoleum manufacturers.

Segregation Process

Another method of improvement of soybean oil which has aroused a very widespread interest is the process of segregation. Several different processes are now available for separating the soybean oil into a non-drying fraction which produces an excellent edible oil and a drying fraction which approaches linseed oil in its drying properties. Soybean oil, in common with other animal and vegetable oils, consists of a mixture of component parts. Some of these have no drying properties at all, other portions are relatively poor in their film-forming properties, and still other components are excellent drying materials. The segregation process separates the non-drying and poorly drying components from the oil, leaving a remaining fraction of markedly improved drying properties. The two most widely used methods make use of a solvent to selectively fractionate out the material of good drying properties from the non-drying fraction. In one of the methods, furfural, which is obtained from agricultural waste products, particularly oat hulls, is used as a solvent and in the second method, propane, a gaseous hydrocarbon obtained as a by-product in the refining of petroleum, is used under pressure in the liquid state. Both the furfural and the propane method of separation require large and expensive plant installation. However the products obtained by the segregation procedure are sufficiently improved over soybean oil itself that the application of these methods is becoming more widespread.

Probably the most promising single development leading to increased utilization of soybean oil in the protective coating industry is the development of copolymer modified oils. A host of intermediate chemicals common to the plastics and synthetic rubber industries are now plentiful and

economical in price. Such reactive materials as butadiene, styrene, substituted styrenes, acrylonitrile, vinyl compounds, cyclopentadiene, terpenes, unsaturated alcohols, etc. have been reacted or copolymerized with soybean oil to give a unique series of drying oils. The group of reactive materials which are combined with soybean oil are collectively termed "monomers." They are capable of reacting with themselves to form polymers which are identified as the plastics and synthetic rubbers of commerce. In addition, they can combine with soybean oil by addition at the reactive bonds in the fatty acids. Reaction of soybean oil with these monomeric materials results in outstanding drying oil products especially suitable for the manufacture of interior and exterior enamels.

Truly remarkable results are produced by the copolymerization of various monomeric materials with soybean oil. Whereas soybean oil itself sets up in from 16 to 20 hours and never becomes wholly tack-free, some of the copolymer oils will set up in an hour or less and attain complete freedom from tack in as little as 4 or 5 hours. Soybean oil films are soft, having a hardness of 0 to 1 by the widely used Sward Rocker Hardness Meter in which higher numbers designate harder films. On this basis, linseed oil films have a hardness of 2-3 and some soybean copolymer oil films have a hardness approaching 60. These hard, tough films are especially desirable on surfaces which must undergo severe usage without loss of appearance or film integrity. For instance, they are excellent for coating of hardwood floors, either clear or pigmented as enamels. Their hard, abrasion-resistant films remain intact for extreme periods under the severest traffic.

Yellowing

J. S. Long has recently pointed out that the yellowing characteristics of drying oils are almost a direct function of their unsaturation. Thus, soybean oil yellows less than linseed oil, which in turn yellows less than the more highly unsaturated perilla oil and fish oils. The copolymerization reaction frequently reduces the amount of unsaturation and leads to oils of improved color stability.

The Archer-Daniels-Midland Co. pioneered in exploring the reactions of drying oils with the various commercially available reactive monomeric materials. Out of the many experimental products prepared several containing soybean oil have been judged worthy of commercial exploitation and are now being sold to the paint industry. These products are characterized by unusually fast rate of set-up to a continuous film, excellent through dry, very good stability plus unusually good gloss, gloss retention and color retention. Products prepared in this manner are outstanding in their uniformity and their durability.

● Soybean oil, due to recent modifications, is now the No. 2 drying oil but faces severe competition. Author has been working with protective coatings for Archer-Daniels-Midland Co. since 1935, is now director or research.

The hydrolysis of soybean oil to give fatty acids and glycerine is becoming an important industrial process, and production capacities have been greatly augmented in the last few years. The glycerine is used in the manufacture of a host of manufactured products ranging from cosmetics to dynamite. The fatty acids are becoming increasingly important. They serve as a basis for the preparation of alkyds and synthetic ester as pointed out above. In addition, they are used as chemical intermediates for the preparation of amines, amides and nitriles which are, in turn, used in the preparation of synthetic detergents, flotation agents, textile finishing compounds and a rapidly increasing list of other industrial applications. The capacity for production of these chemicals derived from fats is now being materially increased.

The contributions of research work on soybean oil for industrial purposes are constantly opening up new vistas of usefulness. The practical paint manufacturer, who a few years ago dismissed soybean oil rather preemptorily as being interesting but not practical for a general line of paints and vehicles, is now very keenly aware of this exciting newcomer in the protective coating field. Whereas previously the usage of soybean oil was confined to specialty applications, the modified soybean oils now produced as the result of the technical ingenuity of the oil chemists can be used in practically every application that was previously restricted to linseed and tung oil only. Modified soybean oils are now used in house paints, in barn paints, in flat wall paints, in the highest grades of interior enamels, in exterior enamels, in interior floor finishes, in spar varnishes, in traffic paints, in linoleum, in caulking compounds, and in a whole host of other diversified paint and protective coating products.

On the basis of the above enumeration of some of the more important methods by which soybean oil has been upgraded for drying oil purposes the future looks extremely bright. From an economic standpoint there are some vital factors affecting the industrial utilization of soybean oil.

In the first place, the primary usage of soybean oil is for edible purposes and as a result the market price is very closely tied in with the price of cottonseed oil. When either shortages of cottonseed oil or a heavy edible oil demand make the price of cottonseed oil high, soybean oil may be priced as high as linseed oil or may under rare circumstances even be higher in price. Whenever such conditions exist, industrial soybean oil usage will be limited to a very small number of highly specialized usages in which soybean oil is markedly superior to other competitive drying oils.

In the second place, the variety of modified soybean oils which have been described involve a considerable amount of processing, which, of course, must necessarily increase the price above that of the ordinary commercial grades of soybean oil. Under the present cost structure, unless the price of soybean oil is about 5 or 6 cents per pound under the price of linseed oil, the soybean specialty oils will be about the same in price as linseed oil. In this case the strong tradition of linseed oil usage will result in relatively limited sale of soybean products.

Competition

There is a third consideration dictating the choice of drying oils to be used by the industrial user. Concurrently with the amazing advances in soybean technology, there has been a marked improvement in the processing of other oil materials. Tall oil, particularly, is coming to the forefront in the drying oil field. Tall oil is a mixture of fatty acids and resin acids which is recovered as a by-product from the processing of paper pulp from pine wood. Production of tall oil has risen from about 23 million pounds in 1937 to 202 million pounds in 1946, and according to available estimates, the production could be doubled by the introduction of recovery systems in plants which do not now produce tall oil. The low cost of tall oil as compared with normal vegetable drying oils has resulted in a markedly expanded use in the drying oil field.

Castor, oiticica and fish oils are additional fatty materials which are competitive with soybean oil for industrial purposes. Increase in supplies and reduction in prices of any of these products would affect the usage of soybean oil. This is particularly true in the case of castor oil which is primarily imported from Brazil and which when dehydrated is directly competitive with soybean oil for high quality architectural enamels.

Looking into the future, the position of soybean oil in this highly competitive field is very favorable. As a result of continuing research and investigation, soybean oil now stands as the second most widely used drying oil. Based on statistics on the utilization of oils in the paint, varnish and allied industries during the first half of the current

(*Continued on page 82*)

SOYBEANS IN INDIA

By SASANKA S. DE

Indian Institute of Science, Bangalore, India, and Department of Food Technology, Massachusetts Institute of Technology

SASANKA S. DE

PRODUCTION of the soybean in India is a comparatively recent development. The crop has been known in India for more than a century. It is largely grown in Danjeeling district of North Bengal and it might have been obtained originally from China through Tibet. In addition to Danjeeling district, soybeans are grown also in Nepal, Bhutan and Sikim, the total area being only 20,000 acres. It is also grown in Punjab, Bengal, Behar, Orissa, Assam, Central Provinces, Madas, Bombay, Boroda, U. P., Sind and Kasmir.

In 1932 great impetus to its increased production came from the late Mahatma Gandhi. He wrote a few articles advocating its increased consumption. A fairly large quantity was produced in the country and a good amount of Manchurian beans were also imported.

Most users, however, cooked the bean as such and tried it as a *dhal*. Great difficulty was experienced in cooking these beans and in some cases digestive disorders were noticed from eating these partly cooked beans. As the result of this they steadily went out of use.

The Nutrition Research Laboratories at Coonoor carried out school feeding experiments with soybeans cooked as a *dhal* and found that the children did not benefit by its use. There was evidence that many of the children actually lost weight. With a view to further elucidating the position, the Indian Research Fund Association set up a special sub-committee to go carefully into the question of the nutritive value of soybeans. The committee carried out work at four centers: Coonoor, Dacca, Bombay, and Lahore, and conducted experiments not only with experimental animals but also with human subjects.

Whole Beans

Their researches were almost exclusively with the whole bean. Allowing for the variations at the different centers, the results obtained by them were nearly of the same order. Whole soybeans fed at the same level as the common Indian pulses did not show any superiority in regard to their protein value over the latter; in fact, it was consistently inferior to Bengal gram in this respect.

Experiments with human subjects confirmed the poor digestibility of the whole bean and the low biological value of the protein in that form. In their final report, the committee concluded that although soybeans contain more of fat, minerals, vitamins and "available" proteins than other beans, they have, for some unknown reason, not proved superior to other beans within the range of experiments reported.

The committee, however, felt the need for a fresh approach to the problem and to investigate the possibilities of processed products such as milk, processed flour and the sauce which are the chief forms in which the bean is being used in most parts of the world.

Population, Milk Supply

Deficiency in total proteins and more particularly in the proteins of high biological value, is India's most serious nutritional problem. This deficiency may not manifest itself in mortality and disease, but it is evident in the slow rate of growth, reduced size of body, lack of efficiency and vitality. That this is actually the case is abundantly manifested by the condition of both men and cattle. With studies carried out in different regions in India, it has been found that where cattle are ill fed and small in size, the milk production per head of human population is low, the human physique is poor. Average weight of cattle and man is fairly well correlated.

India's population is increasing at a fast rate and the pressure of population has forced man to encroach upon pastures and break land for the cultivation of food crops with loss of fodder for cattle. The result is that today there is a great scarcity of cattle feed, the cattle are underfed and milk yielding capacity is extremely low. The present average consumption is about 5 ounces per day—the average in south India is less than this figure—and, judged by the standards, this is about one-fourth of what we require for our normal well being.

Considering the present rate of increase in population, it may be difficult to maintain the present average level of 5 ounces per head in the years to come. With the present plan of agricultural development of the country, it is expected to attain the minimum standard of milk production in about 15 years, but till then some substitute for milk like soya milk was thought necessary to maintain an average level of nutrition.

Soya Milk

Soya milk was not much known in India before 1943. During the great Bengal famine of 1943, soya milk was produced on a small scale by Dr. B. C. Guha of Calcutta University and myself for feeding a few hundreds of starving infants and toddlers. A majority of the subjects survived the crisis period on a diet which consisted mainly of soya milk. Later in 1944, the work started on a systematic basis at the Indian Institute of Science, Bangalore.

Soya milk as prepared by the Chinese method was found to be bitter in taste and the nutritive value is not much enhanced by the method of production of the milk. A simple method was evolved which resulted in the production of a palatable and highly nutritive milk. The procedure is as follows:

The beans are soaked overnight in water and then spread out in trays to germinate for 2 days to enhance the nutritive value of the protein as well as the vitamin content. After germination the skin is removed. The kernel is then heated for about 10 minutes at 70°C. with a dilute solution (0.08%) baking soda or glycerine (1.08%) which extract the bulk of the coloring matter and bitter principle. The extracted water is removed and the kernel washed with water and ground to a fine paste with the addition of calcium hydrogen phosphate. The paste is then treated with about three times the volume of water and heated to the boiling point for 15 minutes. The milk is filtered through the seive. Two percent cane sugar and a small amount of salt was added to improve the

taste. As a major part of the milk in India is used as sour curd it was found advantageous to add invert sugar by hydrolyzing cane sugar with dilute acid. The composition of the soya milk was as follows:

	Per Cent
Total solids	10.15
Protein	4.2
Fat	3.4
Carbohydrate	1.8
Salt	0.75

Comparative Vitamin Content per liter of soya milk and cow's milk

Soya Milk	Cow's Milk
Vitamin A, 750 I. U.	1015 I. U
Thiamine, 0.82 mg.	0.43 mg.
Riboflavin, 1.1 mg.	1.32 mg.
Nicotinic Acid, 2.49 mg.	1.16 mg.
Ascorbic Acid, 21.6 mg.	17.8 mg.

The following results illustrate the comparative nutritive value of the protein of soya milk and cow's milk as determined by different methods:

	Biological Value (by rat expts.)	Haemoglobin Regeneration	Human Metabolism	Regeneration of liver protein
Soya milk protein	79	44.9	67	*90%
Cows' milk protein	82	46.3	74	

*As compared with milk casein.

The following results will show how, on the addition of different foods, the supplementary value of soya milk to the average Indian diet can be steadily improved:

	Average Increase in Weight per Rat per Week (in grams)
a. Rice diet	3.5
b. Rice diet + soya milk (10 cc) prepared after overnight steeping	6.5
c. Rice diet + soya milk (10 cc) from beans germinated for 48 hours	7.2
d. Rice diet + soya milk as in c. fortified with calcium	8.1
e. Rice diet + soya milk in d. + yeast extract (2%)	12.4
f. Rice diet + cow's milk (10 cc).	8.6

The above results indicate that it is possible to evolve a fortified soya milk which has higher supplementary value than that of cow's milk without increasing the cost of the product too greatly.

Soya milk ordinarily contains very little calcium (30 mg/100 cc). Various salts were tried of which calcium hydrogen phosphate has been found to increase the calcium content to 85 mg. per 100 cc. Calcium and phosphorous metabolism of soya milk fortified with this salt has been studied and it has been found that both calcium and phosphorous are utilized to the extent of about 85 percent. Comparative studies carried out over a period of 45 days with children, who received the milk as supplement to their basal diet, showed that supplementary calcium was utilized to the extent of 23.1 percent in the case of soya milk and 22.8 percent with cow's milk.

Cow's milk contains practically no iron

● Soybeans hold great promise for improving the Indian diet. Author came from the Institute of Science at Bangalore, India, to work under a research fellowship at Massachusetts Institute of Technology.

but soya milk contains 13 mg. of iron per liter. The haemoglobin regeneration of rats rendered anemic by prolonged feeding of a milk diet was determined by feeding soya milk with ferric chloride as control. The haemoglobin response with soya milk was 89 percent of that with equivalent amount of ferric chloride. The percentage of iron utilized was 49.5 percent with soya milk compared with 54 percent in the case of ferric chloride.

About 25 percent of the original bean is wasted as residue. This can be utilized as a cattle feed. The dried residue, however, can be mixed with wheat flour to the extent of 20 percent for preparation of bread and biscuits. The protein value of wheat flour is enhanced by more than double by a mixture of 80 parts wheat flour and 20 parts of residue.

Human Feeding

The above observations which were made with experimental animals were subsequently confirmed by human feeding experiments, which can be divided in three headings as follows:

A. *Infants and Toddlers in Welfare Centers.* This experiment was carried out on 20 infants and 80 toddlers over a period of 1 year. Regular records of weights and heights were made; in addition, clinical observation was made at regular intervals.

The difference between the two milks in percentage of mean increase due to cow's milk was found to be 12.3 over a period of 1 year.

B. *Orphanage Feeding Experiment.* This main human feeding experiment was conducted with 400 children in local orphanages to assess on percentage bases the overall nutritive value of soya milk compared to that of cow's milk. In addition to recording weights and heights, systematic record was maintained of nutrition deficiency in a score card, red blood cell count and haemoglobin level at periodic intervals. The statistical analysis of 6 months' results *showed no evidence of soya milk's inferiority to cow's milk.*

C. *School Feeding Experiment.* Six thousand children were under this experiment. The program was fitted in the midday feeding program of the Civil and Military Station of Bangalore. The children received 12 ounces made up of 4 oz. of curd and 8 oz. of rice. Half of the number received soya curd with rice and the other half separated milk curd and rice. A representative section of the two sets of the children was under systematic health observation. The results of the first 6 months showed that there was practically no difference in response between the two products

A general observation made by many who have sampled the milk is that it has a nutty flavor and they would like the usual milk flavor incorporated in it. Systematic investigation is in progress in this direction and it has been observed that inoculation with certain types of cheese cultures produced a flavor resembling that of milk flavor. A simpler way of approach is to add 15-20 percent of the volume of cow's milk and to heat to the boiling point. This imparts the desired flavor. The price of soya milk is determined, to a large extent, by that of the bean; under the present condition, the cost of soya milk is about 3 cents if the annual production is about 90,000 gallons per year. Pilot plant production of soya milk has been standardized at the Indian Institute of Science, Bangalore. For the human feeding experiments we have been producing 800 pounds of soya milk daily.

Present Interest

There is already a good deal of public interest in the production of soya milk and related products. Many states and commercial organizations have already expressed a desire to start large-scale feeding trials. The bottleneck at the present time is the availability of the bean. The Food Department of the federal government is arranging to import a fair amount of beans for feeding trials of soya milk at different centers.

The Indian Research Fund Association has been convinced of the superior nutritive value of the soybean over other Indian pulses. The agricultural departments of different provinces and states are performing trials on the selection of varieties suitable under Indian conditions. It is rather unfortunate that all the varieties cultivated in India are of the commercial type. The vegetable type of soybeans has not yet been introduced in the country. A few samples of the vegetable type have recently been obtained from America for trials in different parts of the country. It is highly probable that the discouraging results obtained by earlier workers in India may be due to using the field type of the bean rather than the vegetable type.

The Food Department of the federal government constituted a subcommittee for increasing the production of the bean and popularizing it. The panel recommended the production of soya milk, soya flour and soya oil. The four vital points on

which the production of the bean was stressed are as follows:

1. The soybean, because of its high protein, fat, etc. would be an excellent supplement to the poor man's diet.

2. It is a high yielding pulse giving a large return per unit area; it is capable of playing an important part in the rotation of crops.

3. It is a useful fodder crop and soya bean cake is a valuable food for cattle, a point which should not be overlooked in India where the cattle are so poorly fed.

4. Beans are of great industrial importance because of their oil, etc. and which serve as a good raw material for the plastics industry.

The Committee feels that the public should be educated as to the nutritive value of the bean and it should be taught recipes in which the processed soybean is used. As to its nutritive value, the Indian consumer is not well enough informed to judge. The opinion and habit of the Indian consumer now can be easily changed in view of the existing shortage of food.

It is considered that a threefold program might be necessary in order to give the soybean its rightful high place in Indian diet. The program should consist of:

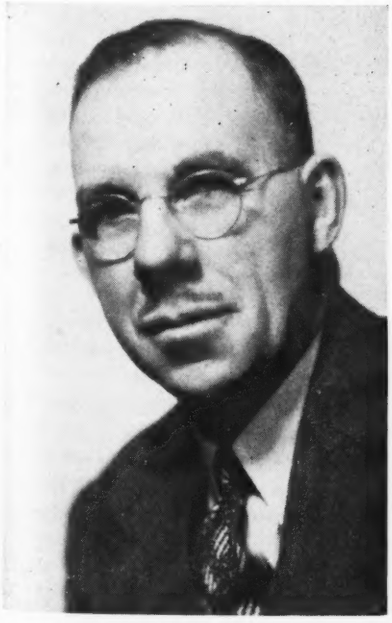
1. Further fundamental research on soya and its products.

2. Educating the public in the use of soya by means of publications, lectures, talkies, radio, etc.

3. Encouragement of the food industries to prepare various soya products by means of special concessions and facilities.

A special organization may be established by the government in cooperation with various other public bodies and businessmen for organizing the production, distribution and application of soybean in the same way as for other essential food commodities.

J. V. ROSS



SOYBEANS IN THE CANADIAN

Fats and Oils Economy

By J. V. ROSS

Victory Mills, Ltd., Toronto

IT AFFORDS me a very great deal of pleasure to bring greetings to this meeting from your Canadian neighbours, and I assure you it is indeed a great pleasure to be here and to accept your good hospitality. I know that Mrs. Ross and I will long remember and cherish the memories of our visit to Memphis.

The subject which has been assigned to me, namely, "Soybeans In The Canadian Fats and Oils Economy", is rather broad, and one which cannot be dealt with fully in a short time. However, I will attempt to touch on some of the more important aspects having particular regard to Canadian production and the effect which our production has upon our domestic market.

You are aware of the fact that Canada is deficient in edible vegetable oils, and that we have always been an importing nation. During the last war however, when imports from other countries were cut off, it became apparent that we would have to produce more of our requirements, consequently, the growing of oilseed crops, such as soybeans, sunflower and rapeseed was encouraged and promoted.

Soybeans Successful

Of these crops, the production of soybeans was by far the most successful in Ontario. In prewar years, our annual production totalled a mere 50,000 bushels, but despite the adoption of a discouraging attitude toward the crop by some of our high government officials, we have steadily increased the figure until this year it is estimated the production in Ontario will exceed by a considerable margin the 2 million bushel mark. This, however, will supply only about 20 percent of our present domestic edible oil requirements. There is a possibility the requirements will become still greater by the legalizing of the manufacture and sale of margarine.

At the present time, soybean oil represents over 30 percent of our total liquid edible oil consumption. The source of this oil is, of course, our domestic production plus importations of beans and oil from the United States. During the war, and until August 1st of this year, our fats and oils, both domestic and imported, were under strict government control. The sale of soybean oil could only be made to certain manufacturers as designated by the government, and the oil was allocated almost exclusively to the shortening trade. Only 5 percent of the crusher's monthly production was allowed to be sold for industrial uses. These government regulations, which included a fixed price and strict allocation to manufacturers, were lifted on August 1st of this year. Therefore, it has just now become possible to engage in free trading operations.

When you consider that with our 2 million bushel crop this year, we will meet only about 20 percent of our requirements for the shortening trade alone; that we have the distinct possibility of the manufacture and sale of margarine, and that we are now free to provide soybean oil for industrial uses, you will readily see that the Canadian fats and oils economy will continue to depend on importation of supplies.

Our Canadian government, but particulary Canadian industry, have shown interest in, and given support to, the development of oilseed crops, and as pointed out earlier, the production of soybeans has been by far the most spectacular. Soybean oil is highly regarded by the trade and markets for the oil include the shortening industry, fish canning, and food industries in general. However, soybean oil is not entirely acceptable to all groups in the food industry. For example, we have some manufacturers of mayonnaise who have not learned to appreciate the fact that present day soybean oil differs greatly from the type of product which was marketed 15 years ago. The large majority of food manufacturers in Canada however, have learned to appreciate and rely on the uniform quality of soybean oil where the reversion factor is no more a problem than it would be with any other edible vegetable oil.

In the industrial field, the demands for soybean oil have, unfortunately, not been met. This of course, as was explained earlier, has been caused by the government allocation of practically the total soybean oil production to the food industry. Today we are free to meet these requirements and develop industrial markets. Therefore, soybean oil is finding a place in the paint and varnish industry, in electrical insulations and coverings, for the manufacture of printing inks, leather dressings, soft and liquid soaps and in the cosmetic and drug trades.

We believe that, if we continue the pro-

duction of a high quality oil and realize that refined oil adequately degummed, shows good stability, we will continue to replace many of the oils previously imported from other lands. The Canadian crop should and doubtless will be materially expanded. We can see no reason why Canada should not continue to increase her production many fold, but, I have no hesitation in assuring you that we will continue to import substantial quantities of soybeans from the United States for crushing in Canada, in order to meet the present and future demand for soybean oil. There will be a potential market for soybeans in Canada. However, it should be remembered the price will have to be competitive with peanuts offered from the sterling areas and other edible oilseeds.

The protein phase of the industry is one where much work remains to be done; but in Canada increased demands for protein feeds and increased feeding of soybean meal to livestock and poultry, have followed closely the trends of development in your country. An increase in scientific feeding methods and more liberal feeding of livestock and poultry will further strengthen the demand for proteins.

In conclusion, I would state that the soybean crop in Canada is of vital and real importance to the Canadian fats and oils economy. It represents by far the largest and most important source of domestic liquid edible oil. I am confident that the industry is only in the early stages of its development, and that it will grow at a comparative rate with the progress made in the United States. However, I would reiterate my statement that we will still be dependent on substantial imports of soybeans from your fair land for some time to come.

• Soybean production is assuming greater importance in Canada, but still supplies only 20 percent of Canadian fats and oils needs. Canada will be a customer for U. S. soybeans for some time to come.

Papers Omitted

Due to lack of space two convention papers that will be of great interest to our readers were omitted from the September issue. They were: "South Goes East," Heartsill Banks' delightful account of his 2 years in Korea; and "The Soybean Crop and the Southern Grower," by W. M. Scott.

Both will appear in early issues.

GOVERNMENT

GOVERNMENT PROGRAMS

Affecting the Soybean Industry

By GEORGE L. PRICHARD

THERE is still a world shortage of fats and oils, although the situation today is much better than it has been for a number of years. To the extent that dollar exchange is available, any of our surplus oilseeds or fats and oils should find a hungry export demand for some time to come. But when foreign production of fats and oils is restored to prewar levels, demand for exports from the United States will likely decline sharply. The increased use of margarine, the expanding markets for vegetable oil products in other foods, and the technological progress being made in fats and oils are hopeful signs, as *it does not now appear that we can compete for foreign markets in large volume and at satisfactory prices when foreign production can satisfy needs abroad.*

We are continually asked for information on fats and oils problems that do not come under the jurisdiction of the fats and oils branch. This is understandable because operations relating to oilseeds and fats and oils are handled in so many agencies of the government. For example, there are now three agencies authorized to purchase oilseeds and fats and oils. In addition to purchases by our branch some items may be purchased by the Army Quartermaster Corps, and others by Treasury Procurement.

Since there also seems to be some confusion as to who does what in connection with import and export controls and allocations, I want to summarize briefly for you the present administration of these controls. Under the law enacted last year, the authority for both import and export controls is vested in the Secretary of Commerce. Export licenses for shipments under approved allocations are handled exclusively by the Department of Commerce. Import controls are administered in the fats and oils branch and export allocations for fats and oils originate in our branch. Allocations for the export of oilseed meal and cake originate in the grain branch of PMA. Our branch has no part in the determination of these meal and cake allocations, although we recognize that from the viewpoint of the producer as well as the processor, oil meals are simply another product of oilseeds.

The export allocations for fats and oils are issued on a quarterly basis. Before we make our recommendations for any quarter, we hold a meeting in Washington at which all interests in the trade and farm organizations are represented. Each group is invited to the meeting and is requested to select its representative to speak for it. In a sense, these meetings supply the need for an informal advisory committee and we intend to continue them. Copies of the data to be considered are distributed in advance of each meeting and are available to anyone on request. These data show forecasts of production, imports and stocks for each fat or oil, and the per capita consumption of edible fats and of industrial fats for stated periods. Projected export data are not shown nor are probable export allocations indicated.

At each meeting all the current problems and data are discussed. Although these meetings are called to discuss fats and oils data, they are open for discussion of other related problems affecting the industry. At the last few meetings considerable time was devoted to a discussion of the possibility of export allocations for protein meal.

A stenographic transcript is made of the discussion at each meeting and copies of the transcript and statistical data are also available to anyone. It takes several days to duplicate and distribute this material but, in order that the interested groups may receive pertinent information as soon as possible, we ask each official representative present to report promptly after each meeting to the people he represents.

PRICHARD

Following these meetings we determine the total quantity of fats and oils to be allocated for export and the specific allocations by types and destinations. These determinations require consultations and agreement with all other interested government agencies. In recommending these allocations we always try to provide for adequate

Working of export controls, the support program and the Research and Marketing Act are explained. Author heads fats and oils branch of PMA.

supplies for consumers in the United States. There are naturally wide variations between individual and group viewpoints in the trade. As an example, we had quite a discussion at our meeting on August 30 regarding the export of soybeans from the 1948 crop. The processors' representative recorded their position as to the maximum quantity which should be allocated for export. Representatives of farm groups also recorded their position but to my surprise took no decided stand on this question.

The present formal procedure calls for 50 copies of our recommendations to be submitted to the Department of Commerce. After approval by the Secretary of Commerce, the allocations are returned to the Department of Agriculture and upon approval by the Secretary of Agriculture are officially released to the public. With one or two exceptions, our recommendations have been approved as submitted.

Our recommendations for the fourth quarter of 1948 are now being considered and we hope the allocations will be announced within the next few days. We recognize the need for prompt announcement so that all segments of the industry may know what the allocations are before the heavy crop movement.

As you know, periodically we have had erratic fluctuations in prices of oilseeds and fats and oils since ceiling prices were discontinued. These wide fluctuations are not desirable from the point of view of producers, crushers, or consumers. In most cases the extremes did not coincide with any factors which could be evaluated statistically. I realize that even the import and export controls which alone are now in effect may have some temporary influence on prices and price relationships.

Support Program

The Department of Agriculture has recently announced its support price program for 1948-crop soybeans. The support price for green and yellow varieties was set at $2.18 per bushel, for No. 2 soybeans with not more than 14 percent moisture. This price support will be available in all soybean areas. Black, brown and mixed varieties will be supported at 20 cents per bushel less than green and yellow varieties or $1.98 per bushel. The support price program will be handled by means of farm storage and, for the first time, by warehouse loans and purchase agreements.

Warehouse loans will be available to farmers for eligible soybeans stored in warehouses approved by CCC and for which negotiable warehouse receipts are issued. Storage will be paid by CCC at rates not in excess of those specified in the uniform grain storage agreements.

Purchase Agreements

The purchase agreement feature of the support price program will be in effect this year for the first time with respect to soybeans. Under this program the producer of the soybeans visits the county office and requests approval of a purchase agreement. He notifies the county committee as to the *maximum* number of bushels of soybeans which he will tender to the government and pays a ½ cent per bushel service fee. The producer does not receive any funds under the purchase program until he delivers the soybeans to Commodity Credit Corporation.

He is not required to deliver any of the commodity to CCC and may dispose of it in commercial channels at anytime he sees fit. However, during the month of May, 1949 he may tender the soybeans or a warehouse receipt covering eligible soybeans to Commodity Credit Corporation and receive the support price. CCC is not offering any form of financing agreement to processors and banks for the 1948 crop.

Under the new farm legislation passed in the closing hours of the 80th Congress, 1949-crop soybeans will be supported at between 60 and 90 percent of parity until December 31, 1949. After that date the bill provides that support prices may vary from zero to 90 percent of parity. When the long-range price support goes into effect, a new parity price formula also becomes effective. As is true of present parity prices, the new parity price formula is based on the relationship of the prices of all products farmers sell to the prices of the commodities farmers buy. Also, the relationship between the prices of these two groups of commodities in the period of 1909-14 is still used as a base period.

The difference between the old and new parity formulas is simply this: The old formula makes use of the relationship between prices of individual farm commodities in the period of 1909-14. Because of changes in methods of production, improvement in crop yields, and many other factors, that period does not reflect present-day price relationships. The new formula takes into account the relationship of the price of the individual farm product to the average price of all farm products for the 10 immediately preceding years. This procedure keeps the parity prices of individual farm products adjusted to changing price relationships. It is an automatic formula that each year adds the new year and drops the oldest of the ten preceding years as a basis for determining the parity price of individual farm products.

The change from the old to the new parity formula changes the parity prices for individual farm products. In general, the parity prices of livestock and livestock products are increased while the parity prices of grain and cotton are reduced slightly. For soybeans the new parity formula would result in a parity price as of August 15, of $2.48 per bushel as compared with the comparable price of $2.41. However, the average parity prices for all farm products as a group are the same under the old and new parity formulas.

Research Act

And now I would like to say a few words about our work under the Research and Marketing Act of 1946. United States production of oilseed crops has more than doubled in the last decade, and the Department of Agriculture is therefore devoting more of its research efforts to improvement in the processing and marketing of these crops. Here are some examples of that work:

The fats and oils branch is gathering data on the origin, variety, and physical and chemical characteristics of different samples of soybeans. After intensive research, we hope to report on the quality, quantity, and value of the products from these different kinds of soybeans. The study should yield valuable information for both grower and processor on providing more and better products.

We are studying flavor stability in certain vegetable oils; we are looking into new uses for soybean and linseed proteins, and we are making a study of problems in the storage of soybeans. The storage study probably will be extended later to cottonseed, flaxseed and peanuts.

The object of one of our research projects is to determine the effects of new oilseed processing methods on the whole industry and on returns to growers. Still another project goes into the whole picture of oilseed marketing, processing and distribution, and is designed to improve efficiency at each step in movement of the crop and its products from producer to consumer. And we are trying to develop better grading methods and better marketing facilities and equipment for oilseeds.

The whole program is being handled carefully and on a long-range basis, but we are definitely on our way. It may be several years before beneficial results can flow from some of these studies, but we anticipate that those results will fully justify the money, time and effort devoted to them.

Trends in the

FATS AND OILS SITUATION

By WILLIAM B. CRAWLEY
Asst. Administrator for Production, PMA

YOUR COMMITTEE has asked me to talk about a subject which takes in quite a bit of territory. "Trends in the Fats and Oils Situation" could cover just about anything I might choose to say. Anything that is, having to do with fats and oils.

This group is the American Soybean Association, however, so I'll be guided by that fact and limit most of my remarks to that crop. Such references as I may make to other fats and oils will be those necessary to round out the whole picture.

It could hardly be news to this group that a record crop of soybeans is on its way to market. And this is an achievement worth examining.

Before the war, during the years 1935-39, we almost doubled our production of soybeans—from 49 to 90 million bushels. But —even so—the yearly average production amounted to only 56 million bushels.

During the war, soybean production doubled again, and in 1945 reached a record 192 million bushels. But in 1946, farmers bettered this record with a 201-million-bushel output. This year, all records are due to fall again—the forecast is for a 1948 crop of 205 million bushels. And this crop is the newcomer, whose production before 1924 was so inconsequential that accurate figures for the crop were not even compiled.

This is an outstanding achievement. But what makes the large soybean production so significant in the fats and oils situation today is that, besides soybeans, we shall also have moving to market this fall bumper crops of cottonseed and peanuts, and these three will assure a substantial increase in 1948-49 in the production of vegetable oils used mainly for food. Altogether, this crop production may mean an increase over 1947-48 of roughly half a billion pounds of edible vegetable oils.

The picture for animal fats is a little different. Because of the smaller 1948 spring pig crop and a declining number of cattle on farms, animal fat production in 1948-49 may decline slightly, particularly the inedible fats. The large flaxseed crop also in prospect, however, assures an abundance of linseed oil. And the over-all situation ahead is for increased supplies of domestically produced fats and oils.

How will imports affect the supply situation?

The U. S. depends on foreign sources for a relatively small but important part of her total use of fats and oils. Before the war, imports consisted largely of fats and oils used for industrial purposes. Exports consisted almost entirely of fats and oils for food uses, with lard the principal item. Supplies of fats and oils available in world surplus-producing areas were large in relation to this country's import demands. So, if we needed more fats and oils, we just boosted our imports.

This situation changed during the war, when important sources of supply—such as the Philippines and other Far East countries —were shut off from world trade. For the first time since 1924, the U. S. exported more fats and oils than she imported. This was possible because of the large wartime expansion in fats and oils production—particularly of the vegetable-oil crops—and of restrictions on civilian consumption.

In 1946, however, this country returned to a net import position, and we're likely to maintain this position in the future. In many cases, it is considerably more economical to import the oil than to produce it here at home. And in other cases there is no satisfactory substitute produced in this country for the oils imported for industrial purposes.

Since the war, however, world supplies of fats and oils have been relatively scarce. While the quantity available to North America and Europe from surplus-producing regions has increased some, this still is only a little over half the prewar level.

Recovery Slow

World recovery in the production of fats and oils has been much slower than was generally expected when the war ended in 1945. Partly, this was because of political disturbances in areas of the Far East which normally supply a large part of the fats and oils moving in international trade. The typhoon which hit the Philippines last December also reduced production for 6 months or more and reduced the amounts of copra moving in international trade. Partly too, it was because crop and livestock production in Europe was hampered by inadequate supplies of feed, fertilizers, and machinery, as well as by the extensive drought during the summer of 1947.

The world trade outlook in fats and oils is further complicated by the uncertainty attending monetary and trading conditions, although the European demand should be reasonably well maintained during the life of the European Recovery Program.

So while there will be a strong export demand in 1948-49 for fats and oils from this country, it's hard to say just how much will actually be shipped. Quantities shipped, of course, are subject to export controls under legislation which will remain effective for at least several more months.

Here at home, demand for fats and oils has been at a high level of consumption and this is likely to continue. As a result, prices for fats and oils have been high, even in relation to the general price level, which itself is high.

One factor contributing to the increased domestic demand for edible vegetable oils has been the larger production of margarine since the fall of 1947. Apparently, we can expect this outlet to continue large in 1948-49.

So, in fats and oils, you have this situation: *Very* large domestic supplies, especially of vegetable oils such as soybean and linseed and cottonseed, because of the record and near-record crops being harvested this year. You also have a slight increase in imports, which will add to the total supplies.

Balanced against this supply situation you have an exceptionally strong demand for fats and oils, both at home and abroad. But exports are limited, currently, by export controls and to a small extent by a lack of exchange.

What can this situation mean to growers —and processors—of soybeans?

Well, I am no prophet, but I can sum up for you what are perhaps your own conclusions, judging from past history and the normal trends of production and marketing. So I shall proceed to stick out my neck.

I think growers of the vegetable oil crops, including soybeans, can normally expect at least a moderate decline in prices. And growers themselves may have a lot to say about how large that decline is.

If a large part of the crop is rushed to market early in the season, you're likely to see prices fall close to the support level.

For soybeans, as you know, the price support has been announced at $2.18 a bushel for green and yellow beans grading No. 2 and containing not more than 14 percent moisture. Black, brown, and mixed varieties will be supported at $1.98 a bushel. That price support compares with an actual seasonal average price for the 1947 crop which amounted to $3.28 a bushel. So that would be a substantial drop.

If farmers cooperate in the orderly marketing of their crop, however, even a record crop can bring them a fair return. In most years, there has been a substantial increase in the price farmers received between October and the following January. For the 1937-41 crop years, this increase averaged 20 percent. I see no reason why farmers should not reap the benefit of their production efforts, together with the rest of the industry. But, unavoidably, a stabilized price must be accompanied by orderly marketing.

One other phase of the fats and oils situation which I want to mention is of particular interest to growers of vegetable oils. And that is the future of production. How large a soybean industry, for instance, can this country maintain in the years ahead?

Acreage and production goals for next year's crop have not yet been recommended to farmers, but we do know that in arriving at those figures, we shall have to give increasing attention to a problem which accompanies, and partly results from, the greatly expanded production of tilled crops during and since the war.

This greatly expanded production, you know, which helped so markedly in offsetting the loss of fats and oils imported from the Pacific area during prewar years, was not an unmixed blessing—either to the nation or to farmers themselves. I speak now of the cost of this huge output in terms of soil fertility, and I hardly need to remind this group of the importance of maintaining the physical health of the farm production plant.

Soil Depletion

What happens when we drain off more soil fertility than can be restored through normal production processes? Take soybeans, as an example. For every 20 bushels of soybeans harvested from an acre of land—and that's a pretty good average yield—they tell me that you remove from the soil these plant foods: Around 70 pounds of nitrogen, 16 pounds of phosphoric acid, 30 pounds of potash, 3 pounds of calcium oxide, 5 pounds of sulfur, and 5 pounds of magnesia. Nature replaces some of this available plant food, but not all of it.

Now, you can't continually drain off that much plant food year after year, as we have done recently, without damaging the land. If you followed such practices, the result would be a poor soil which was not only badly depleted, but which, because of that depletion, was increasingly subject to erosion—the actual loss of the topsoil itself. Destroyed soils, of course, mean less food and, ultimately, a weaker people and a weak nation.

Farmers have not been unmindful of this threat to the nation's biggest production plant. All during the war years and since, the record shows a growing number of wise farming practices carried out by farmers under the nationwide agricultural conservation program.

More and more lime and fertilizer materials have been applied to supplement the soil's mineral content; cover and green-manure crop practices have protected the land and improved its soil structure; strip cropping and terracing, contour planting and cultivation, tree plantings and the construction of farm ponds and dams have all slowed down the flow and checked the run-off of water. These and many other soil-conservation measures have served to counterbalance the toll of soil fertility incident to the enormous farm production of recent years.

The very fact that United States farmers were able to boost production of agricultural products so substantially during the war was due—not entirely, but largely—to the productivity which a nationwide conservation program had built up in the soil during the thirties. Improved varieties, better insect and disease control and favorable growing seasons cannot do it all—the soil must be productive if these are to produce results on our farms.

Last year production of food alone was 41 percent greater than before the war. Farmers can be proud of their achievements, which have made it possible for us to feed our own people better than ever before while exporting large amounts to help other less-fortunate people. But we mustn't forget that this huge output has not been obtained without cost, and we must be about our job of repaying that debt, or we shall end up with a bankrupt soil—the forerunner of a bankrupt nation.

At best, our conservation programs, while yielding solid and worthwhile accomplishments, have merely arrested the forces of soil destruction. We need to expand these conservation efforts if we are to reap the full benefit of our original programs.

We must expand our educational efforts to see that farmers—and city people too—understand the urgent need for better soil care while carrying on the daily tasks of producing food and fiber to meet the nation's need. We must expand our research on soil problems and their solution; we must encourage more technical experimentation directed toward the improvement and maintenance of our soil productivity. And, finally, we must expand our action programs to encourage and assist in actually putting into effect the soil- and water-conserving measures which education and research have shown to be wise, and—indeed—essential.

This may at times call for reducing our acreages of soil-depleting, tilled crops; it undoubtedly will call for much better rotation practices than farmers have been able to follow since the war started.

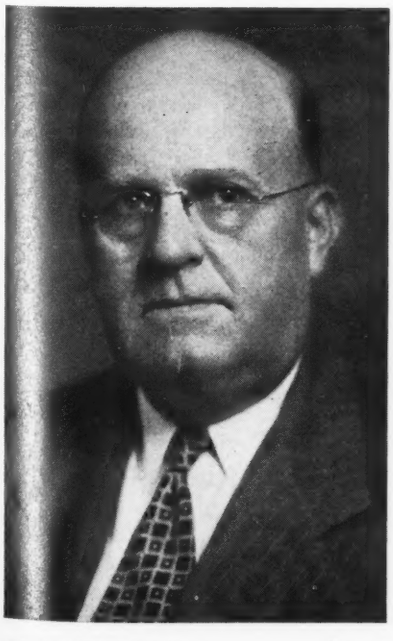
Waking Up

We have been a long time in realizing that the soil resources in this country are not inexhaustible—as a nation, we have used up the soil's good sustenance at a faster rate than any other country in the world. But I believe that now we are awake to the need for halting the needless waste of our natural gifts.

There is no alternative—we must either meet that challenge, or we shall face the danger of an increasingly less fertile land which, at length, will no longer feed us. With our national population expected to continue increasing at around a million people a year for some time, certainly the former neglect and abuse of our soil resources must continue to give way to an honest appraisal of our problems and a firm resolve to solve them intelligently. We appeal for the wholehearted support of all agricultural groups in working toward that end.

• Author says a moderate decline in prices may be on the way, suggests growers should avoid market glut this fall or prices may hit support levels.

WILLIAM B. CRAWLEY



EUROPEAN RECOVERY PROGRAM

and the Soybean Producer

By FOUNTAIN THOMPSON

ALL OF YOU here are, I am sure, familiar with the objectives of the European Recovery Program. During the time when the Foreign Assistance Act was being discussed and considered in Congress, the press carried very comprehensive and complete coverage of the pros and cons of the proposed legislation. Most everyone was ready to express an opinion about the United States giving assistance to wartorn Europe, and as a result the public developed a very considerable understanding of Europe's recovery problems and of our interests in those problems. Now, most people will agree that, to quote the words of the Foreign Assistance Act itself, "the establishment of sound economic conditions, stable international relationships and the achievement by the countries of Europe of a healthy economy independent of extraordinary outside assistance," is essential to the "establishment of a lasting peace," and is in the "general welfare and national interest of the United States."

The Economic Cooperation Administrative was set up by the Congress to administer the European Recovery Program. A brief explanation of the functions of the Economic Cooperation Administration as an organization and of our problems at operating levels, therefore, may be of interest and may be of help in understanding the relationship of the European Recovery Program to the soybean industry.

The European Recovery Program is not a relief program. It is a recovery program and I wish to emphasize the word recovery. To accomplish recovery, we will help finance, during the life of the program, the cost of those imports by the participating countries which will contribute most to the attainment of a stable and self-supporting economy by the time American assistance is discontinued.

European countries, in return for our assistance, have agreed:

1. To take measures necessary to stabilize their currencies and maintain valid rates of exchange.

2. To cooperate with other participating countries to increase the interchange of goods and services between them, and

3. To make full use of their resources in this cooperative undertaking. Participating countries are committed to this cooperation through bilateral agreements signed with the United States.

The organizations which have been established to carry out this cooperative program are the Economic Cooperation Administration with headquarters in Washington and a European office in Paris, E.C.A. missions in each participating country, and the O.E.E.C.—the Organization for European Economic Cooperation with headquarters in Paris. The latter, the O.E.E.C., is a completely independent organization in which the United States does not have membership. The effectiveness of O.E.E.C., however, is of the most importance to the success of the European Recovery Program.

The responsibilities of O.E.E.C. are, in brief, to develop an integrated program for European recovery and to make recommendations to E.C.A. regarding the most effective type of American assistance which will implement that program. The complexity of OEEC's job is enhanced since the American assistance represents only about 5 percent of the combined total economic resources of participating countries. The 5 percent is, of course, most vital to European recovery. However, the 95 percent, representing the participating countries' own resources, is even more important and proportionate attention must be given it by OEEC in developing the overall program.

The Job of ECA

ECA's job, briefly and again over-simplified, is:

1. To examine and analyze the programs of assistance recommended by OEEC.

2. To propose and encourage any changes which may appear better calculated to achieve the basic objective of European recovery.

3. To allocate financial assistance to individual countries based upon its review, and

4. To authorize the expenditure of the funds so allocated to participating countries for the procurement of those quantities of individual commodities for which ECA financing has been requested by them and approved by ECA.

The functions of ECA might be likened to those of a banker. We do not buy commodities but furnish the money with which authorized agents of participating countries may purchase items previously approved for their programs. In one way, however, ECA is quite different from a bank—you see, 80 percent of the funds we furnish are grants and 20 percent are loans. We do assure ourselves, however, that all these funds are spent for the purpose for which they were intended. Moreover, ECA is required by law to determine that the funds are spent with due regard to maintaining our internal economy; are spent in the United States rather in other countries in cases when needed supplies are surplus to domestic requirements; and to see that funds are used in a prudent businesslike manner calculated not to cause inflationary trends both here and abroad.

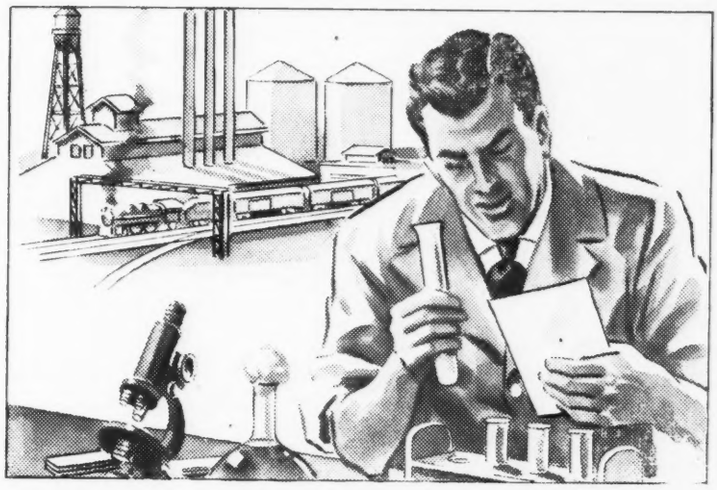
The process of allocating funds to the participating countries and of determining the commodities which will be purchased begins in the capitals of these countries. Each country develops its proposed total import program based on its recovery objectives, surveys its foreign exchange position, then determines which of the imports it is most necessary to finance with ECA funds. The proposed program is then sent to OEEC in Paris.

In the OEEC's examination of each country's import program, consideration is given to the overall program for all participating countries, the most effective use of each country's resources and the country's available foreign exchange. Adjustments are then made to reflect the most strategic use of ECA funds within the total made available under the Foreign Assistance Act. This stage of the job is most difficult and requires the utmost consideration and judgment on the part of OEEC for it is the rule rather than the exception that the total requests of participating countries for ECA funds exceeds the amounts available. This requires difficult decisions on the part of the OEEC before its decisions are submitted to ECA for consideration and approval. ECA's examination of each country's program is made with much the same criteria as those used by the Paris organization.

When agreement has been reached between the OEEC and ECA over the division of funds between countries, each country's total program is examined with representatives of the country. It is then determined what part of the total will be financed with ECA funds. Consideration is given to whether commodities are available from the United States or other possible source of

• This year's record crops of oilseeds should contribute greatly to Europe's recovery. Author is with the office of director of foods of ECA.

Serving the Soybean Industry



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supply in sufficient quantities to meet all requests and whether prices and other conditions of procurement meet the requirements of the Foreign Assistance Act.

The approved commodity programs are set in motion through the issuance of procurement authorizations. These authorizations represent the approval of ECA to the recipient countries to buy commodities covered by them. The procurement authorizations are converted to letters of commitment to banks which in turn issue letters of credit payable to suppliers. In the past, some countries with their own dollar balances purchased commodities which were urgently needed and ECA, in such cases, issued procurement authorizations on a reimbursable basis. In some cases where, because of conditions which make it advantageous to the recipient country, procurement is directed to government agencies. However, in all cases where it is practicable, the purchase of commodities with ECA funds is directed through regular commercial channels.

There is one other very important phase of the European Recovery Program that should be explained. The Foreign Assistance Act provides that, of the amount of ECA dollars furnished to participating countries in the form of grants, equivalent amounts in each country's own currency be set aside for such eventual use as is jointly determined by ECA and the participating country. These so-called counterpart funds are accumulated somewhat in the following manner: Denmark is given an allocation of ECA funds to buy 4,000 tons of linseed meal in the United States. The Danish government authorizes its regular importers to buy this meal from exporters in the United States. These importers in turn pay Danish kroner to the Danish government in return for the ECA dollars needed to buy this meal. The Danish government in turn deposits these kroner in a special account in the national bank of Denmark. These funds are for use for furthering European recovery and can be spent only with the approval of ECA. They can be used to prevent inflation or deflation in local currencies, for expanding the country's industrial and agricultural plants, for relieving unemployment, or for any other purpose consistent with the objectives of the program.

In line with these same objectives—to secure European recovery—it becomes vital that the commodities approved for ECA financing be those which will contribute most thereto. No unnecessary consumer goods should be imported, since raw materials and capital equipment are so urgently needed. To the extent necessary to provide the ability and willingness to work, food imports are an essential ingredient of a recovery program; beyond that, they are not. This year's improved crops in western Europe have made it possible for us to maintain working ability with less food imports and to direct a larger proportion of our resources to other aspects of recovery, even though the population of Western Europe has increased some 25 million above prewar. Of course, it will be necessary for western Europe to continue to import food. European crops are good but they are not up to prewar levels yet. Moreover, western Europe was a large net importer before the war, importing about one-third of its food consumption.

Among the commodities which remain in short supply in western Europe are fats and oils. Prior to the war, Europe produced about two-thirds of its fats requirements largely from animal sources. That is, they produced large quantities of milk for butter and meat animals for slaughter fat. Since animal numbers were depleted during war years, efforts have been made to increase oilseed production but for the most part these countries will not be able to regain their prewar fats production until such time as their numbers of cattle and hogs have been restored. Since the war, Europe has had to draw upon depleted world supplies, thus aggravating the world supply situation. It has been possible to obtain sufficient quantities of fats and oils from these world supplies to furnish Europe with only about 70 percent of its prewar consumption level.

Oil Industries

Moreover, the curtailment in the fats and oils industries of Western Europe has been ever more severe. Oilseed crushing, oil refining, the manufacture of margarine, compound lard, soaps, processed linseed oil, paint, etc. are in many instances only a fraction of prewar. Recovery of these industries is vital to overall recovery. Yet it is difficult to envisage full and prompt recovery of the oil mills and refineries since the tendency of surplus oilseed producing countries has been to develop their own processing facilities and to export oil and oil cake rather than oilseed. This is particularly true of Argentina, Uruguay, India, and I recall evidence of such tendency from much closer quarters. It is possible that in time copra from the East Indies and African oil bearing materials together with indigenous animal fats will enable Europe's oil industries to recover. However, in the meantime we hope that a part of this year's abundant crops of United States oilseeds can be spared to fill the gap.

Since the beginning of ECA in April, we have financed the purchase of 228,000 metric tons of fat and oil for participating countries. This tonnage is on an oil basis, that is, where oil-bearing materials were imported the oil equivalent was computed in the figure. Of the amount provided to date, 94,000 tons were in the form of processed fats and oils and 134,000 tons was the oil content of oil-bearing materials of which 20,000 tons originated in the United States. These amounts of fats together with other imports and indigenous supplies have maintained and in some instances improved European diets but consumption is still 20 to 30 percent below prewar. Short fat supplies can be better understood in terms of amounts available per capita. For example, the French fat ration is 500 grams of edible—that is just over 1 pound a month—and the soap ration is 100 grams a month. In other words, one average size cake of soap per month.

In order to improve the low fat diet available to western Europe, we must endeavor to (1) send them more oilseeds, (2) more feed materials, and (3) more processed fats and oils.

There are many reasons for giving oilseeds and oil bearing materials top priority. Oil bearing materials furnish food, protein feeds, industrial oils, and fatty acids. They offer employment and permit the use of otherwise idle mills and refineries. Moreover, limited foreign exchange and ECA dollars will go farther in providing fats and oils since participating countries can pay for processing costs with their own currencies. I don't have any inside knowledge of how much of our crops of 206 million bushels of soybeans, cottonseed from 15,219,000 bales of cotton, and 47 million bushels of flax we can expect to export to ECA countries. It is the responsibility of the Department of Agriculture to

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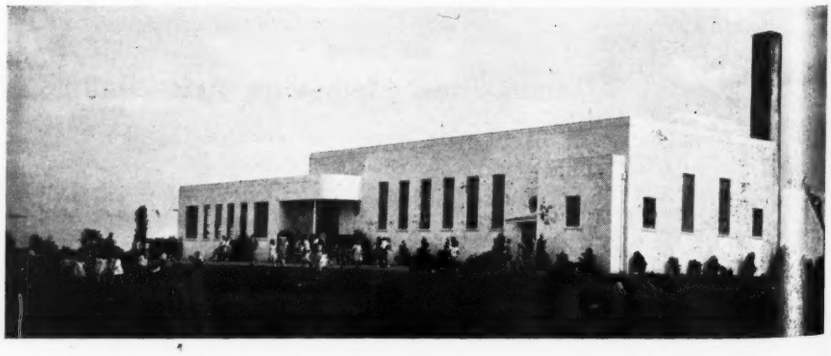

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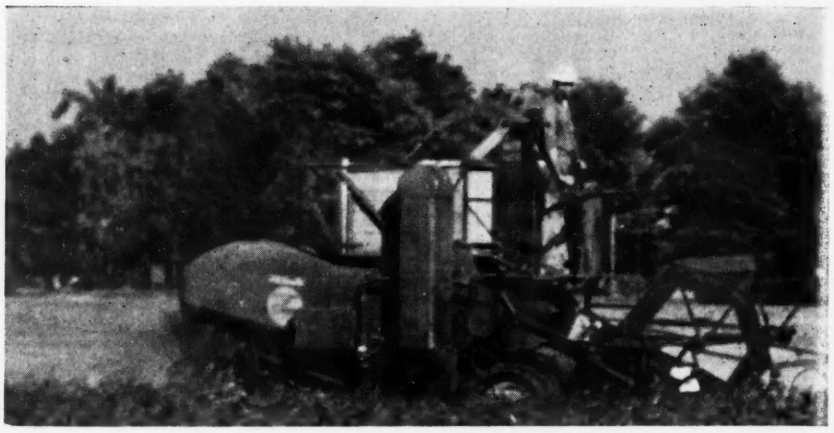
recommend and of the Department of Commerce to determine the amounts of these materials we may export. It does seem obvious, however, that this year's large oilseed crops should permit us to make a significant contribution.

Next in importance to recovery of Europe's prewar fats and oils position are cattle and hog feeds—coarse grains and protein supplements. Grain and protein consuming animal numbers were reduced considerably during the war years. The animals which were carried through these years were in poor condition and not very productive. Moreover, the shortage of grains and protein feeds in years following the war have not been sufficient to bring production per animal unit back to prewar nor has it allowed for any increase in animal numbers. The ECA countries during the years 1935-37 used about 6.4 million tons of oil seed cake and meal annually. Now they are getting only about half of that. They have had to use a substantial part of their coarse grain production and imports in their bread and consequently the animals didn't do so well. It is hoped that our large crops of wheat and feed grains will offer some relief in this respect.

Ease Shortage

When we finally know how much of the oil bearing materials we can export to Europe, how much protein meal that will furnish, and the quantities of feed materials we are able to ship them—then we can hope to fill some gaps with processed fats and oils and with oilseed cake and meal. Fortunately, world supplies of these materials are improving though still not up to prewar. South American countries will have exportable supplies of cake and meal of over a million tons, together with sizeable quantities of fats and oils. The copra supplies of the Philippines and the Netherlands East Indies are looking up and we have large crops of soybeans, cottonseed, and flaxseed in this country. It would seem that the visible world supplies of oil bearing materials should be sufficient to take the worst edge off of the western European fats and oils shortages.



Combining soybeans on the farm of W. M. Wallace, Woodslee, Essex County, Ontario. From the Victory Mills movie, "Beans of Bounty."

In closing, I would like to give you something to think about. I recently heard ECA Administrator Paul Hoffman explain that the European Recovery Program was conceived June 5, 1947, when Secretary of State Marsall went to Harvard University to receive an honorary degree. Mr. Marshall in his address indicated that the United States stood ready to consider how far she might be able to help Europe help herself on the road to recovery. On July 11, 1947, 16 western European nations on their own initiative responded to the suggestion, and met in Paris to prepare a report setting forth their needs and their willingness to cooperate in a joint recovery program. Members of Congress traveled throughout Europe and special committees appointed by the President studied the needs of the European nations and the impact of the contemplated assistance on our resources and domestic economy. On December 19, 1947, the President requested of a special session of Congress that legislation be considered for the recovery and relief of western Europe. Mr. Hoffman went on to say that if the Secretary of State had not conceived the so-called "Marshall Plan" in his address at Harvard and if it had not been implemented, it is practically certain that both France and Italy would have become communistic before now. How long the rest of western Europe could have held out is problematical. However, they could not have withstood the pressure for long and in time they too would have been forced into communism. When that happened, the democratic nations of the Western world would have lost an annual steel production capacity of about 50 million tons. The United States would then have been forced into becoming a garrison state. None of us want to live in a garrison state with the extremely high taxes, regimentation, and tension that would result.

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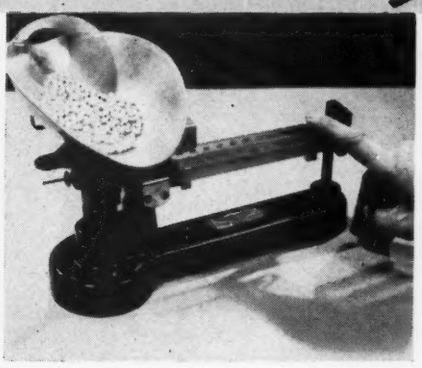
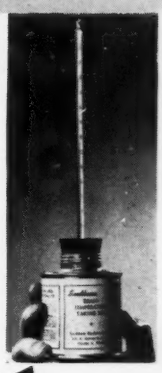
HERE'S HOW EASY IT IS

TO TEST MOISTURE CONTENT WITH A Steinlite

1 Turn on switch, allow instrument to warm up. Push red button, adjust knob to balance needle on meter dial.



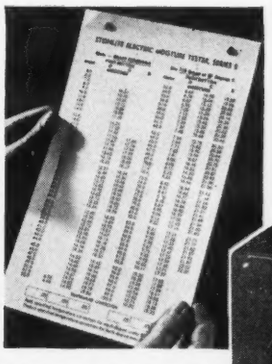
2 Weigh out on an accurate gram scale the amount of sample called for by the conversion chart.



3 Pour sample into can and take temperature.

4 Pour sample from can immediately into funnel. Trip lever and let sample fall into test cell.

5 Push A, B, C, or D buttons progressively until reading is obtained on meter dial.



6 Convert reading on meter dial to actual moisture percentage by means of handy conversion charts, and get final moisture percentage reading.

Over 11,000 in use

Due to its ease of operation, accuracy and dependability, Steinlite is the most popular electronic moisture tester on the market. Today there are over 11,000 Steinlites in use. It is used constantly in elevators, mills, feed processing plants and by many Board of Trade Sampling Departments, and Government Grain Inspection Offices. It operates on the radio frequency impedance principle. Calibrated against official government methods and guaranteed to give comparable results. No technical knowledge is required and no previous experience. The Steinlite is sold on a 10-day FREE TRIAL basis. Price $330.00.

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SEEDBURO EQUIPMENT COMPANY

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WALLEY

(Continued from page 26)

dock there and oilseeds can be unloaded directly from the holds of ships by two suction unloaders at the rate of 2,500 bushels per hour. This is a modern plant, completed in 1939, and can process between 6,000 and 7,000 bushels of beans every 24 hours. It is owned by one of the firms making soy flour and other special food products including soy-cocoa powder, used as a hot food drink.

From the best available information, France could use oilseeds equivalent to at least 10 or 15 million bushels of soybeans per year at the present time, which is many times more than their annual prewar imports of soybeans. This increased demand is partially due to the fact that they have a shortage to overcome, the production of supplies of other oilseeds has been disrupted and that soybeans have become more popular and more appreciated by the French.

Enroute to Italy I spent 2 days in Switzerland, which had nothing to do with soybeans except to make the observation that in that country can be seen the beneficial results of adequate human diet—a striking contrast to its neighboring countries.

In Italy one finds somewhat the same general situation that prevails in France, that is, they have not been able to secure enough fats and oils to approach anything near the prewar standards, a problem which is considerably aggrevated by the fact that the Italian people have been heavy users of cooking and salad oils and their production of olive oil has been seriously disrupted as a result of the war. In the 1935-39 period, Italy imported approximately 1 million bushels of soybeans each year, in addition to liberal quantities of soybean oil, and would import even larger quantities now were the supplies and funds available. I made contacts in Italy with those interested in oilseed industries and found the attitude toward soybeans very encouraging, particularly the comment on the high quality of soybeans produced in the United States.

Due to the fact that Germany presents one of our major problems under the present conditions of army occupation, a 3 weeks' visit to that country was perhaps the most interesting part of my trip. To get a proper perspective of the situation in Germany, one must remember that the new Germany is not the old Germany. Cut off in the Russian zone is only one-third of the original population but with that population there went at least one-half of the original food production, and worse than that, considerably more than one-half of the valuable proteins and fats. This means that a completely new appraisal and shift must be made in the German food economy. Before the war, Germany had a very adequate diet but to attain a satisfactory standard it had for many years imported considerably more than 20 million bushels of soybeans each year in addition to liberal imports of soybean oil. This means that Germany is thoroughly familiar with the use of soybean products. The work which they are doing with soybeans in meeting the present deplorable food problem there is, in my opinion, very outstanding. You must appreciate that the average German does not realize that it is impossible for him to have as much animal protein and fat as was possible before the rich territory now in the Russian zone, was lost. This means violent changes in eating habits. Soybeans, with their high edible protein and fat content, immediately occupy the spotlight in that country. It would be impossible in this brief report to elaborate on the beneficial results which I saw in railroad canteens, hospitals and many other places which I visited in Germany where their present meager diet, consisting principally of carbohydrates, has been supplemented with additions of full fat soy flakes.

I was particularly impressed with the fine work being done by CRALOG (Christian Relief Organizations Authorized to Operate in Germany), cooperating with German food manufacturers in preparing soybean products in the most palatable form.

I was pleased at the large shipments of soy flour being flown into Berlin over the blockade and was reliably informed that the addition of soy flour to wheat flour in the Berlin area has been generally satisfactory and successful. Among smaller bakers in Germany there has been some complaint that soy flour is too dusty and they object to its use. There have also been some complaints that some of the flour has not been properly debittered. In fact the complaints of various kinds had in many instances created enough furore to embarrass the Army of Occupation. More recently a required substitution of soya flour for wheat flour in heavy mixtures of corn flour has resulted in very unsatisfactory bread. This is unfortunate and is resulting in bad publicity for our soya flour.

German Varieties

I visited three experimental stations where German agronomists are working with soybean varieties. It is my opinion that soybeans can be grown in parts of Germany successfully but it will be necessary for them to develop non-shatter varieties and there, as here, soybean growing needs the combine as a satisfactory means of harvesting. Keep in mind that in Germany on a competitive basis a bushel of soybeans used exclusively for vital food can be economical at a much higher price than we ever thought of for soybeans in this country. This is another way of saying that through a term of years soybean growing might expand in that country. In fact a mission is now authorized to visit

(Continued on page 63)

AERO Cyanamid
TRADE MARK
SPECIAL GRADE
(Formerly AERO DEFOLIANT Chemical Dust)

Removes Leaves for Early Harvest

When the soybean crop is made, profits are increased by applying AERO Cyanamid.

AERO Cyanamid removes leaves so that beans dry rapidly to allow easy, efficient combining at an earlier-than-usual date.

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Presents

A Portfolio of Solvent Extraction Unit INSTALLATIONS

THE V. D. ANDERSON COMPANY, with over a half century of experience as the world's largest manufacturer of vegetable oil extraction equipment, presents this portfolio of the new Anderson Solvent Extraction Units. With this experience, plus the fact that more vegetable oils are extracted with Anderson-designed equipment than all other makes and types of equipment combined, the vegetable oil industries can depend upon Anderson for the latest and best in milling equipment. It is interesting to note, too, that the V. D. Anderson Company specializes in extraction equipment. We "eat, drink and sleep" this type of work. This is why you can be sure that Anderson Solvent Extraction Units are the last word in extracting vegetable oils by the Solvent process. Below we give you eight reasons why Anderson units stand out from any other equipment as the most efficient that money can buy.

1. PREFABRICATED, REDUCES INSTALLATION COST

These Anderson Solvent Extraction Units are shop-fabricated into a limited number of large sub-assemblies that can be shipped by freight, hoisted into position and connected together. Field erection time and costs are greatly reduced due to this feature, as are also the piping, wiring, etc.

2. SELF-SUPPORTING, NEEDS NO BUILDING

By making the Anderson Unit self-supporting, no costly building is needed to hold each part in place. Heat losses are prevented by design and insulation. Result? No cost of a building!

3. LOWEST INSURANCE COSTS BECAUSE OF NO ENCLOSURE

With no building around these Units there is no place for vapors to be confined at the Unit. That is why it is impossible to have an Extraction Building explosion with an Anderson Solvent Extraction Unit. Insurance rating bureaus agree, for they have set the rates lower on every Anderson installation. With lower rates and a lower investment to be covered, insurance *costs* are much reduced—this means a reduction in fixed expense.

4. STANDARDIZED DESIGN GIVES STANDARDIZED RESULTS

Since each Unit is made the same as other Anderson Units of the same capacity and has identical relationships of parts, pipes, distances and volumes, results are always standardized where the material being processed is in standard condition. This gives each buyer the assurance of getting results that previous plants have obtained.

5. ONE MAN RUNS UNIT BY REMOTE CONTROL

It is not necessary to have a crew of technicians swarming over the Anderson Unit to check gauges, dials, flow and performance. Controls and indicators are in the control room, easy to read and reach by one man so that he can control every phase of the process without leaving his station, without going out in the weather. This results in greater control over the process and concentrates responsibility.

6. LESS ACREAGE NEEDED FOR INSURANCE STANDARDS

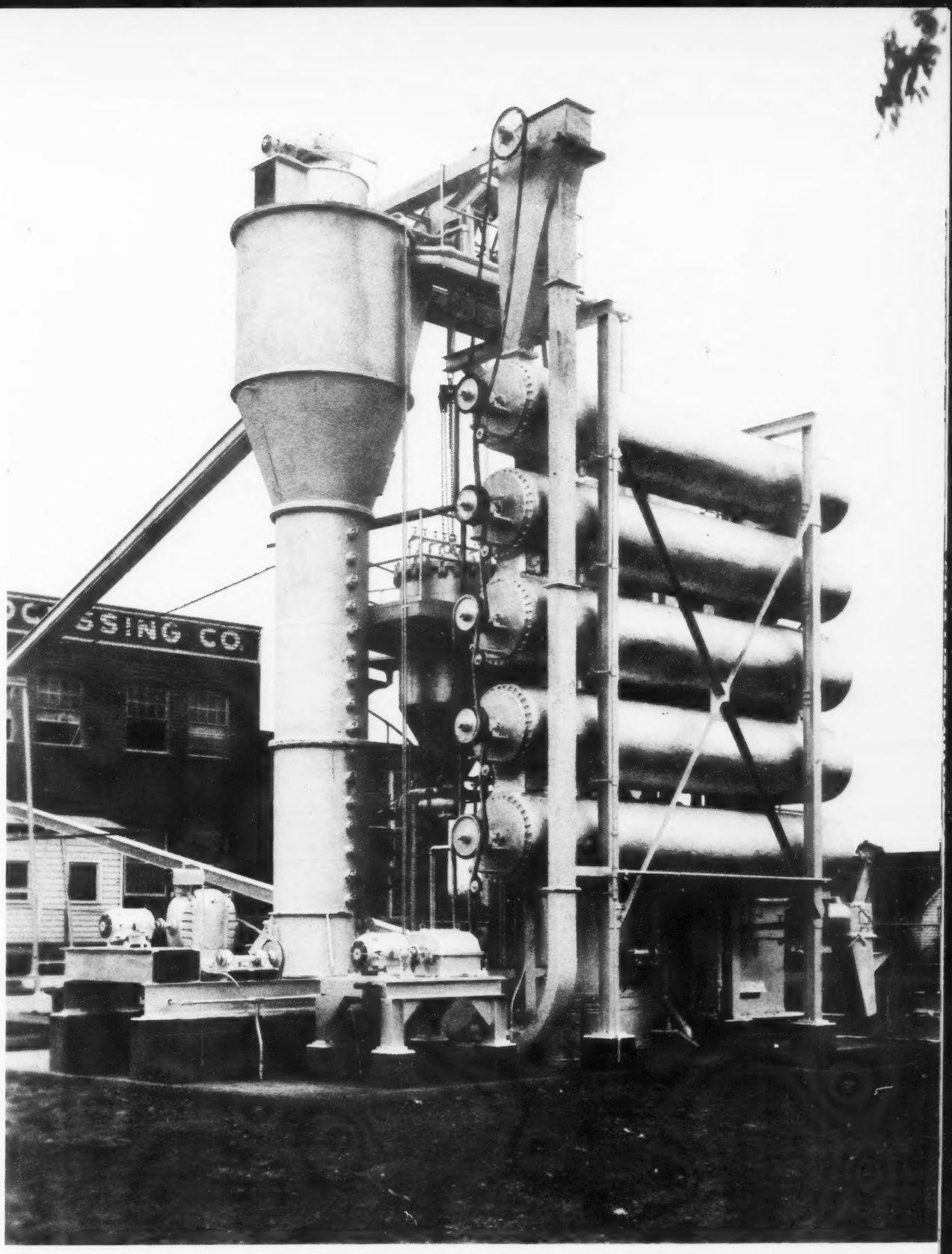
By avoiding the explosion hazards, this Unit eliminates the need for locating the extraction process far from the preparation building. Since the Unit is installed close up to the preparation building, less land is needed for the entire operation.

7. UNITS ARE SIZED TO FIT YOUR NEEDS

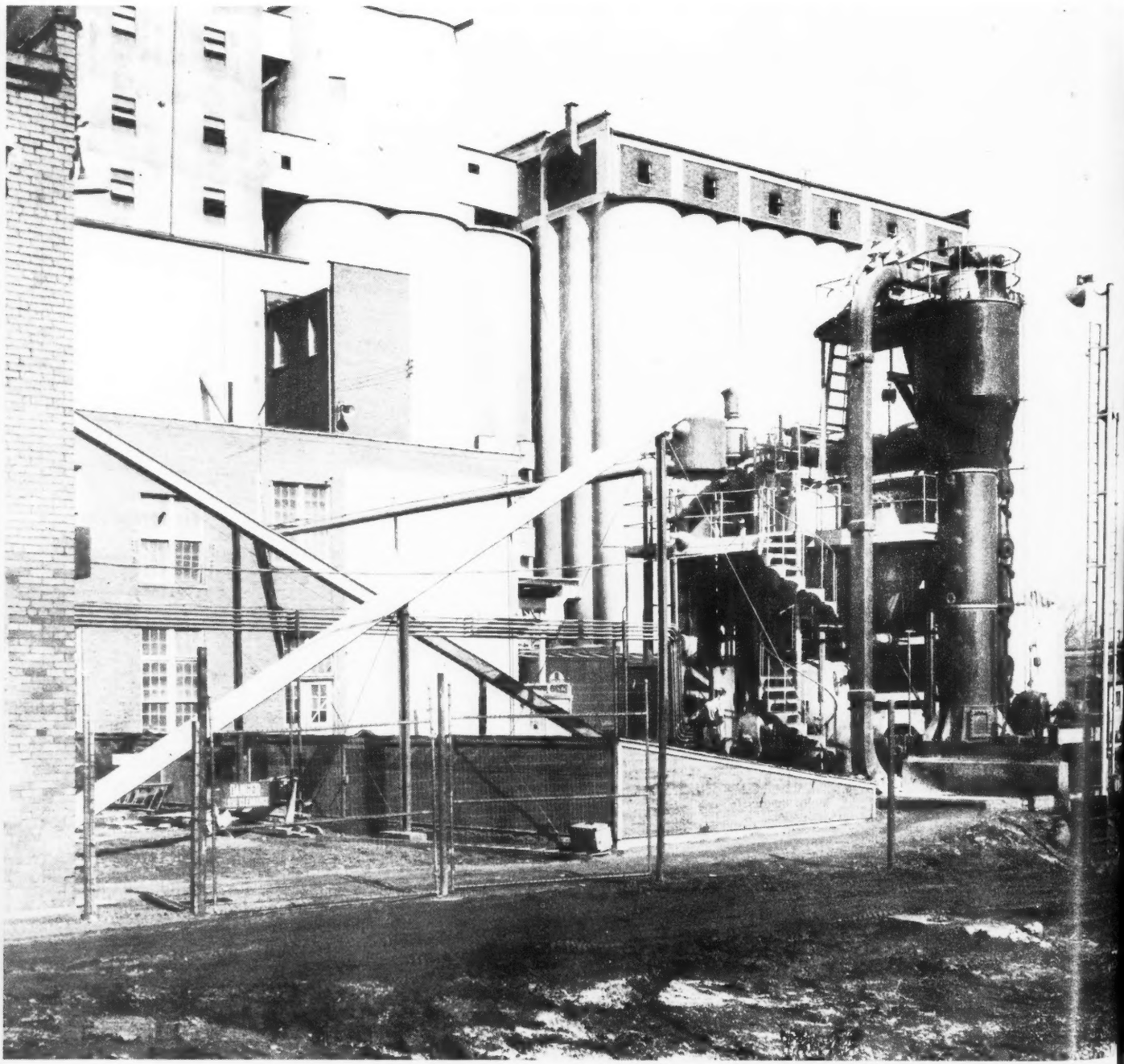
Whatever your requirements, Anderson has equipment to satisfy the needs. There's the 50 ton, the 75, 150, 200, 300 and 400 ton and larger Units, with guaranteed performances of those tonnages in 24 hours. What is it you need? Anderson has it.

8. LOW INVESTMENT, HIGH PRODUCTION

A striking advantage of Anderson's Solvent Extraction Unit is the low investment required for a prefabricated construction that needs no building or supporting structure. In spite of this low cost, Anderson Units have high production—equal or better than their rated capacities.

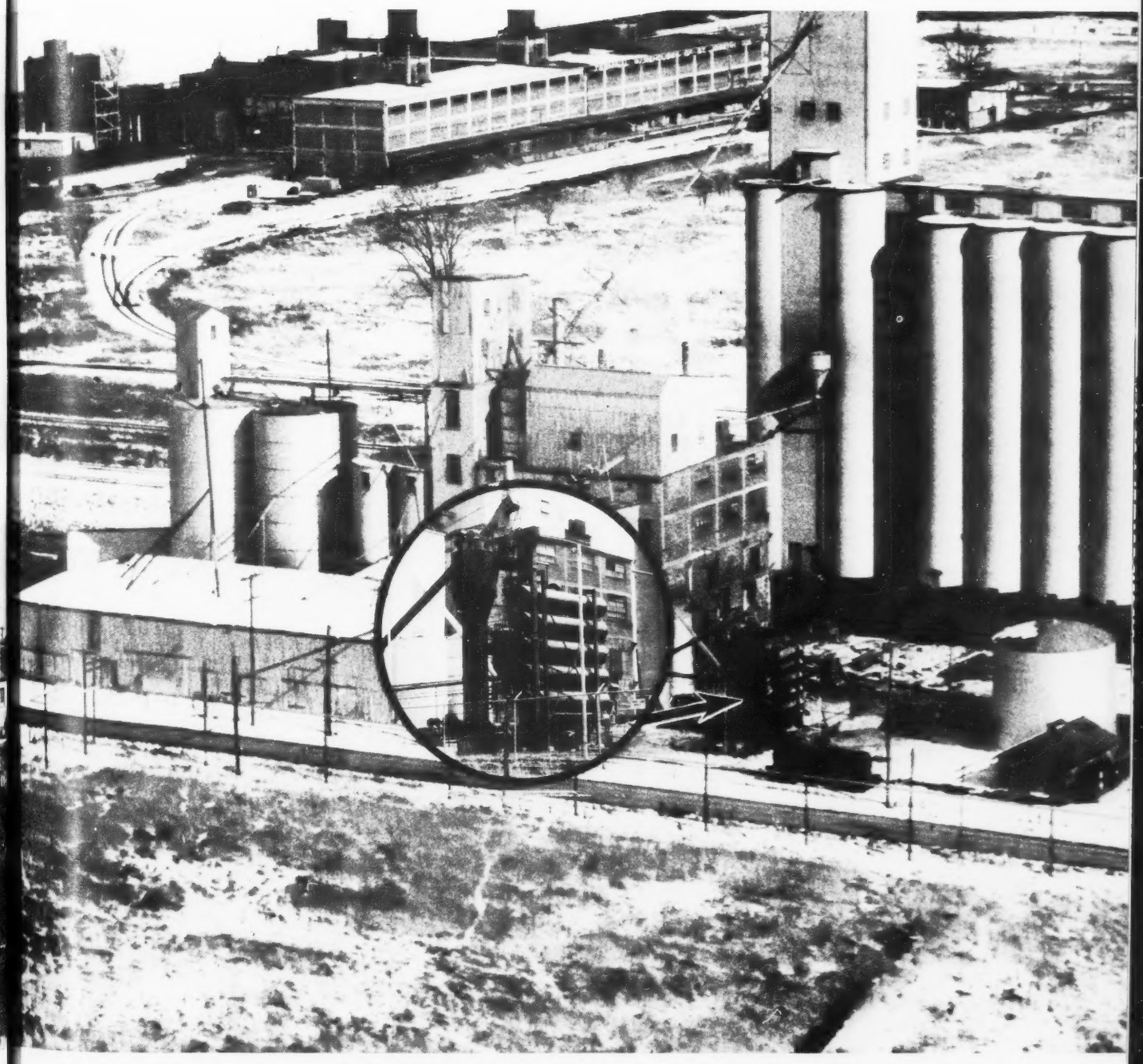


WOOSTER, OHIO is the location of this
Unit which started operating in September 1947



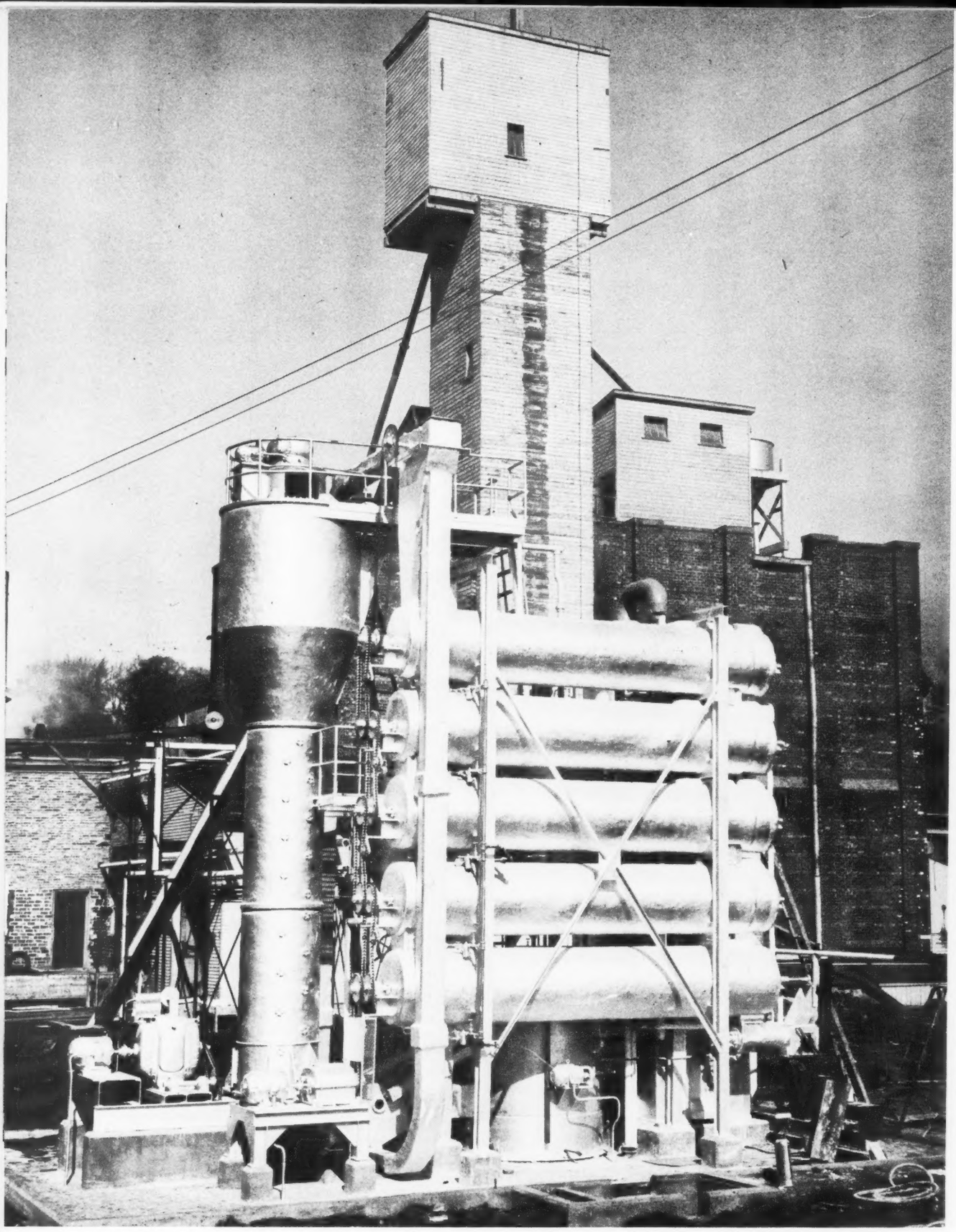
SOYEX CORPORATION has been operating this Unit at Columbus, Ohio since November 1947

A N D E R S O N S O L V E N T

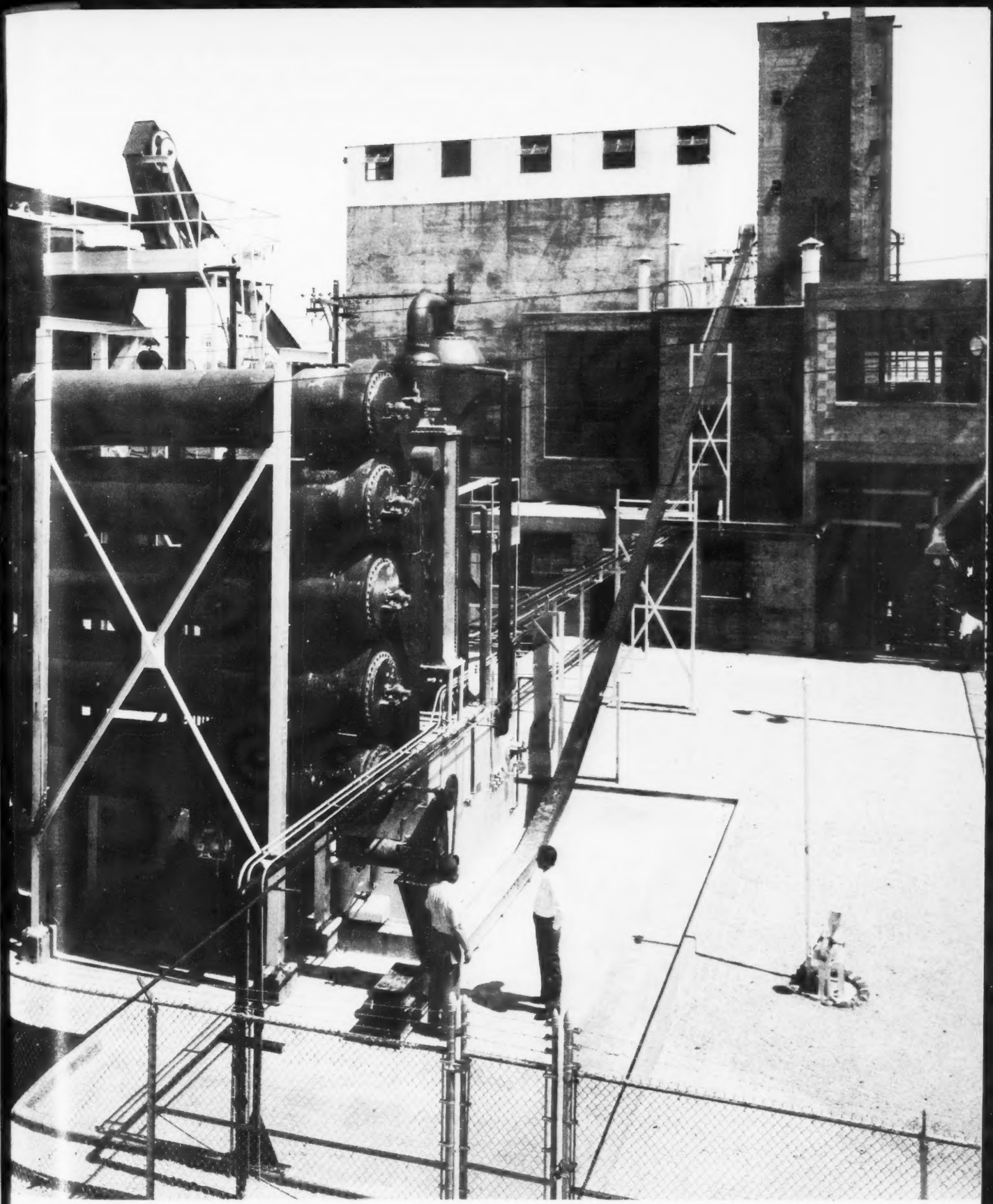


ST. JOSEPH, MO. is the scene of this Anderson Solvent Extraction Unit, owned by Dannen Mills, Inc. Processing started in December 1947.

EXTRACTION UNITS



MUSCATINE Processing Corporation had this Unit installed at Muscatine, Iowa. Has been processing soybeans since February 1948.



LOUISVILLE, KY. is the location of this operation for the Louisville Soy Products Co. which started test runs in July 1948.

AND

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Anderson Solvent Extraction Units
for these companies

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at Henderson, Kentucky

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QUALITY-DEPENDABILITY-SERVICE

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SOYBEAN OIL MEAL PELLETS
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CORN GLUTEN FEED
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A. E. STALEY MFG. CO.

DECATUR, ILLINOIS — FEED DIVISION — PAINESVILLE, OHIO

WALLEY

(Continued from page 58)

the U. S. to learn more about our methods of growing soybeans to replace the rape which they are now growing, as a source of vegetable oil. As long as present boundary lines and restrictions obtain, your observer can see no answer to the food problem in Germany which does not involve the use of huge quantities of soybeans and/or soybean products. Assuming that some other vegetable oil might be secured, yet the problem of protein needs still remains and must be answered.

Due to a shortage of time, I was unable to visit Denmark, as planned, but was able to secure two or three items of pertinent information which are very significant. Denmark, as you know, is one of the few countries in Europe which has been able historically, to produce an amount equivalent to the food it consumes. In balancing their economy it has been necessary, however, for them in export substantial quantities of animal products and import large quantities of protein meal for livestock feed and large quantities of vegetable oil for use in margarine, a substitute for butter shipped out. Before 1939, Denmark imported between 6 and 7 million bushels of whole soybeans per year, which indicates that the processing industry is sizeable for a country so small.

In Holland your observer encountered a rather definite Dutch determination to insist on buying what they want in the way they want it. Previous to 1940 Holland imported 3 or 4 million bushels of whole soybeans a year and they would like to resume imports of whole soybeans, so that they may operate their own processing plants and have both meal and oil for conversion into further end products. As you know, the economy of this small country has been largely built up on the use of raw and unfinished products. Education or necessity may or may not change this attitude.

Much of the oilseed processing industry of Belgium has been based on imports of palm oil, palm kernels, and cocoanut oil much of which comes from its own colonies. They also use considerable quantities of whale oil in the manufacture of margarine. Currently, cottonseed and soybean oil constitute a rather minor percentage of the fats used in margarine.

Before 1940 Belgium imported a little better than ½ million bushels of soybeans a year but since the war they have had only a few small shipments. The processors reported that they were pleased with the quality of American soybeans. Belgium, before the war, imported substantial quantities of soybean oil which they used in shortening and salad oils. They have been receiving small amounts under our export allocations and at Antwerp I was confronted with a serious complaint that shipments of soybean oil received this year were unreasonably high in residues. The manager of a margarine factory showed me samples which he claimed contained 4 percent residues and he stated that he filed a complaint with the Belgium government, which handled the imports and hoped to get some adjustment in price but stated that any hope for adjustment would not cover his cost of clarifying the oil so that it could be used.

In England I found many friends of soybeans and much progress has been made in the use of soy products in food. Before the war England imported 3 or 4 million bushels of whole beans annually and was the heaviest importer of soybean oil in the world. There are, of course, interests in England which have heavy investments in palm kernel, peanut and sunflower production in African colonies and naturally they are forced to push their efforts not only for selfish reasons but because it is difficult for them to operate outside the pound sterling area.

One of the principal paint companies of England is very enthusiastic about the use of soybean oil in paint and is doing everything it can to encourage the growing of soybeans in South Africa in order to augment its needed supplies.

Problem Permanent

Overall England has a permanent problem of meeting its food needs and supplies must be secured somewhere, somehow. That American soybean products may not enjoy some of this market is hardly reasonable.

I regret that shortage of time requires that the foregoing must be so brief and that I must eliminate dozens of interesting detailed experiences that went along with these observations.

To gain a perspective of the European food problem we should remind ourselves of the density of the population on that conti-

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nent. To help us visualize this, let us take the following examples: the combined area of Belgium, Denmark and Holland is less than that of the state of Ohio and yet these countries have three times as many people as does Ohio. The same three countries, together with Luxembourg, are smaller than the state of Tennessee and those four countries have seven times the population of Tennessee. Italy is not as large as the states of Missouri and Arkansas and has seven times as many people as both of them combined.

The population of London alone is greater than the entire population of Illinois, including Chicago. In England proper 75 percent of the entire population lives in cities of over 25,000 and only 7 percent live on farms. In fact England is not very much larger than the state of Iowa and has 13 times as many people.

These figures serve to show us that Europe has an acute food problem, intensified by the division of Germany which places on about one-half of the former food production capacity the responsibility of feeding two-thirds of the population of the prewar Germany.

Now let us look at this situation and what it may mean to the American soybean industry from a business viewpoint. It is easy to say that those people have no money and we cannot continue to give them food. But somehow they must eventually have some credit balance with which to buy needed food supplies and must get the most they can for their money.

It is recognized that the American soybean industry will have severe competition from cheap vegetable oils from other sources but such competition in the edible vegetable protein field does not exist. In view of the permanent demand for both protein and fats in Europe, it is my personal conclusion that there is bound to be a market for substantial amounts of soybeans and/or soybean products on that continent, provided we do our part in business aggressiveness to get it and sales service to hold it. I consider it rather unfortunate that we have made such large shipments of soy flour and soybean oil to that continent without any technical service men to follow through with those shipments to see that they made good. Certainly the mistake in the case of soy flour in Germany has been costly. The policy that "beggars should not be choosers" does not justify any further neglect of this problem.

The American soybean growers themselves have enough at stake that they could well afford to spend some money for sales promotion in Europe because there soybeans are being put to high value uses. As an illustration of what this might mean, let us take the cost of protein for human consumption in Germany. At the time I was there 40 grams of protein purchased at the store in the form of full fat soy flakes cost only one-third to one-sixth as much as 40 grams of protein secured through any animal product and that cost was figured on the basis of soybeans being worth between $8 and $10 a bushel in Germany. Is it not evident that the proper exploitation of the European market for use of our soybeans and/or soybean products for human food can mean much to the American soybean grower? Certainly it is a fertile field for sales and sales education—an opportunity which should not be overlooked.

We must also recognize the fact that prewar Europe imported 30 to 40 million bushels of soybeans a year, mostly from Manchuria, a source of supply not now available. Today the mills which used those beans are idle. They are going to fight for oilseeds to process and the American soybean grower must decide whether or not he wants to get into that market now.

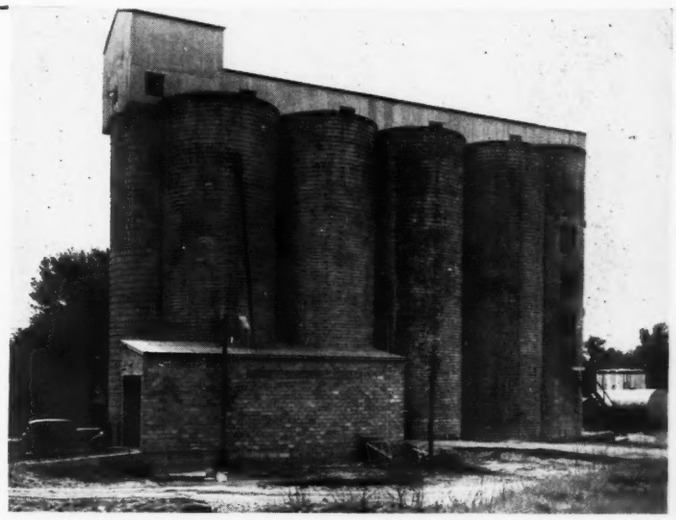
Unfortunately however, the factors involved here do not follow the conventional business pattern. The most distressing thing that I saw in Europe was not a shortage of calories but the shortage of a balanced human ration—too much starch and not enough protein and fat.

I do not want to be dubbed an interna-

Reduce **HARVEST** loss—
Reduce **STORAGE** loss—
with the
HESS DIRECT HEAT GRAIN DRIER

Soybean growers and processors everywhere have proved the tremendous economic advantage of artificial bean drying. Harvest losses are greatly reduced by harvesting earlier in the growing period or under slightly moist conditions. Storage losses are practically eliminated by reducing the moisture content to a safe percentage.

The HESS Drier is perfectly adapted to the drying problems inherent with soybeans. It is safe, efficient, easily accessible and flexible—can be used for any grain. Standard units are available to handle anywhere from 150 to 1000 bushels per hour, and more.



The HESS Direct Heat Drier serves this elevator of the Sterling Soy Bean Co., Rock Falls, Ill.

Write Today—Hess' 50 years of drier experience is at your command. Our engineers will be glad to furnish suggestions for your complete installation. Let us know the average moisture content when harvested and the percentage desired after drying. Also advise us of the number of bushels per hour. Our recommendations will be sent without obligation.

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OUR 75th YEAR

tionalist nor a sentimental chap who wants to rob the United States for the sake of Europe. I do want to state, however, that it is my belief that food is the basic political problem on the continent. The people of Europe must have a better ration not to keep them from starving but to be strong enough to work. We are facing the stern reality that malnutrition of Europe must to some extent be corrected or the democratic way of life is doomed on that continent and the billions we are pouring into this effort may be wasted. My intense interest in this matter comes from the fact that I do not like police government and I do not like to see it take over all of Europe because of the increased dangers and problems it would bring to us. These considerations are too important to be overlooked and since American soybean and/or soybean products constitute one of the most powerful weapons in this "cold war," it is our patriotic duty and job to see that they are fully and properly utilized. I have not touched on the humanitarian aspects of the European food problem, that is, the problem of the sick, the aged, and the orphan children, whose fate rests largely in the hands of charitable organizations. You cannot help but be impressed when you see the need of helpless people and the unselfish service and devotion of those who are administering to them.

Gentlemen, in my opinion, this "cold war" is hotter than you think. Today national security is our most important business.

As producers of a potent weapon in that war let us carry on keeping this in mind: a continued and assured production of soybeans in the United States can have much to do with the preservation of individual liberty here and abroad—a treasure more important than any immediate consideration of price or profit.

HILBERT HEADS BAIC IN WASHINGTON

G. E. HILBERT

Dr. Louis B. Howard has resigned as chief of USDA's Bureau of Agricultural and Industrial Chemistry and Dr. G. E. Hilbert, director of the Northern Regional Research Laboratory at Peoria, Ill., has been named to succed him. Dr. Howard will head the recently formed department of food technology in the College of Agriculture at the University of Illinois and will assume his new duties October 1.

Dr. Hilbert has been director of the Laboratory since January 1946. He entered the Department of Agriculture in 1930 to work on fertilizer research. He was head of the starch and dextrose division of the Northern Laboratory from 1940 until he was appointed director.

Dr. Reid Thompson Milner, one of the country's leading soybean oil chemists, has been appointed director of the Northern Regional Research Laboratory at Peoria, Ill., effective October 1, it was announced by P. V. Cardon, head of the U. S. Department of Agriculture's Research Administration.

A native of Illinois, Dr. Milner has been engaged in physical chemical research for the Department during the past 18 years. Since 1941 he has been in charge of the analytical and physical chemical division of the Northern Regional Laboratory.

Dr. Milner becomes director of the Northern Regional Laboratory with an outstanding record as scientific investigator and research administrator. He is well known for his work in nicroanalysis and in the development of new methods for studying the chemical composition of corn, wheat, oilseeds, agricultural residues, and other farm products to determine their possibilities for wider use by industry. His wide acquaintance among industrial processors of agricultural materials particularly qualifies him for his new position, in which he will direct cooperative research by the Laboratory with manufacturers, as well as with various governmental research agencies.

During the war, Dr. Milner was in charge of research at the Northern Regional Laboratory which resulted in the saving of millions of dollars to the government in connection with the soybean emergency marketing program. Improved standards for determining the oil content of soybeans established by Dr. Milner and his associates made possible guarantees to farmers and processors of equitable prices for this commodity and eliminated overpayments for Government purchases.

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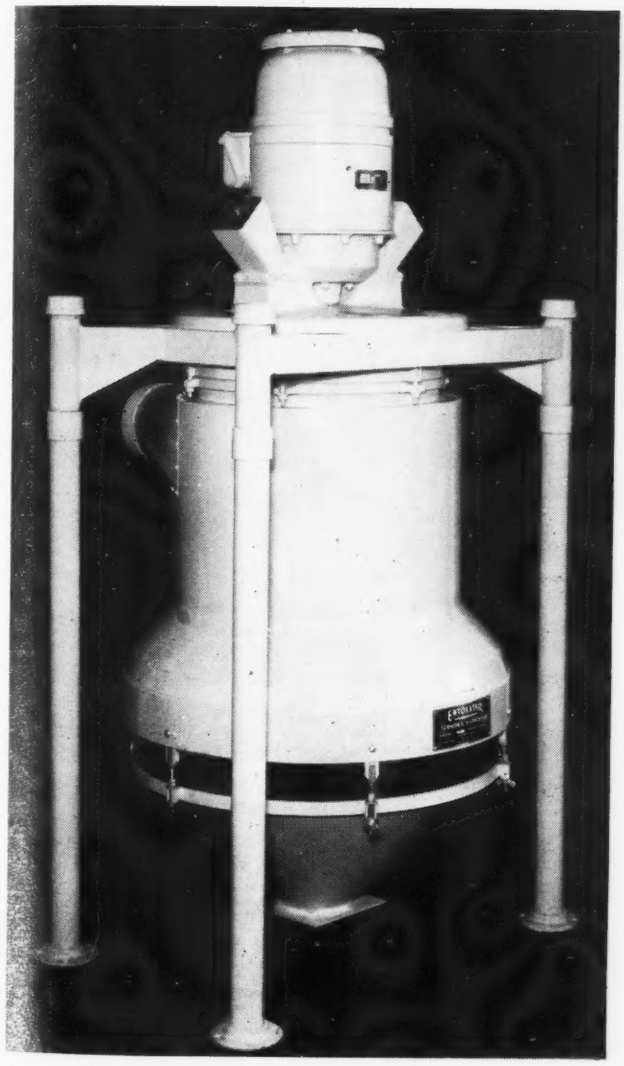

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You get dependable performance and simplicity of operation with this compact machine. The "ENTOLETER" Scourer-Aspirator hulls the bean, cracks the bean and removes the hulls from the bean meat. It performs these services in addition to providing continuous destruction of all forms of insect life, from egg to adult. Send coupon now for bulletins describing the "ENTOLETER" and the "ENTOLETER" Scourer-Aspirator.

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CONVENTION

(Continued from page 23)

Report of Secretary-Treasurer

1947-48 Fiscal Year

The 28th year of existence of the American Soybean Association has been a busy one. It has seen enlargement in the activities of the American Soybean Association, greatly increased activity in the legislative field, and has seen the launching of our field service division. Because of the wide scope of activities, I will divide this report into four sections.

1. General activities and progress.
2. Legislative activities.
3. Field service division.
4. Financial status.

The past year has seen the highest prices ever paid for commercial soybeans purchased for processing purposes, and it has seen some rather decided price fluctuations. It has seen soybean oil go as high as 29 cents per pound, and as low as 14 cents per pound. It has seen meal as high as $109 per ton, and it has seen meal selling at $70 per ton. The industry has undergone the same stresses as the grain crops, but has been fortunate in that prices on soybeans were not pegged at unreasonably high levels.

This has been the second year of operation under the new articles of incorporation. We have had high priced supplies, materials and labor to contend with. It has been a year when costs have risen much faster than our income from advertising and subscriptions. Paper supplies are costing practically twice as much as in 1944, yet our advertising rates and our subscription rates remain the same as they were in 1944. One of the things which the new board of directors must face is a decision on advertising rate increases and subscription costs. And if we are just entering the stage where prices of farm commodities are on the downhill side of the cycle, that decision will not be an easy one to make.

IT HAPPENED IN MEMPHIS

The American Soybean Association, 28 years of age, is beginning to reach maturity. It is reaching that stage where other organizations and other groups regard it as a sound, mature, stable commodity organization. It has reached the stage where governmental officials place confidence in it and rely upon it for suggestions, comments, assistance. It has reached the stage where we are asked to have a representative present at the quarterly meetings called by the fats and oils division of PMA, where recommendations are made pertaining to export quotas on oils, oilseeds and oilseed meals. We are asked to sit in on the meetings with the Army to discuss the usage of soy flour, with the Secretary of Agriculture to discuss research projects affecting the crop, and with USDA officials considering research programs at the Regional Laboratories.

During the year we have installed our own duplicating or printing equipment, in the form of a Davidson Offset press. We have also installed a Vari-Typer, for use in conjunction with the Davidson unit. We do not use this equipment to print the *Soybean Digest* or the *Soybean Blue Book*, but rather to run our form letters, office forms, subscription blanks, letterheads, circulars and other items which we must have in large numbers, and which can be done by offset process. The installation of this equipment has been costly, and can only be justified by continued use over a period of time. However, the problem of getting printing done in commercial shops at a reasonable price and on the time schedule which it is necessary for us to follow became an insurmountable one. We now have the equipment with which to do most all of our own duplication work on all items other than the two publications. Over a period of time it will pay for itself in decreased reproduction costs, and at the same time will enable us to get out work on a much faster schedule—and at the time when we need it.

The second edition of the *Soybean Blue Book* was published during the past year. Response from advertisers was gratifying. Men who should be in a position to know have told us that the second year of life of a publication of this type is the most critical. Our second edition showed more advertisers, more pages, more copies printed, and more profit to us. The editorial material for the *Soybean Blue Book* was assembled by our regular staff, and when no allowance is made for the time spent in editing we show a reasonable profit on the publication. At

FACTS about genuine Soy Sauce

A bulletin describing genuine Soy Sauce, why this product is a 'must' item as a table condiment for steaks, roasts and chops and a kitchen secret used by famous chefs in making soups, gravies, salads and dressings sent on request mailed to

LaChoy Food Products Division

Beatrice Foods Co. Archbold, Ohio

the same time, we feel we are rendering a service to the industry, and we are answering through the statistical material contained therein many questions which would otherwise require time and research by staff members.

During the year we have added office and work space to our headquarters, have added a photographic dark room, and in general tried to increase the efficiency of operation. As the field service program progresses it is going to be necessary to add further space and facilities in order to efficiently carry on those activities.

Legislative Activities

Legislative activity in behalf of soybeans and soybean products has required more time during the past year than during any other year in Association history. You are familiar with the steps which were taken during the winter and spring months in an attempt to repeal the federal taxes and restrictions now applying to margarine.

The margarine industry is the second largest consumer of soybean oil in the United States. As butterfat production has declined margarine has been called upon to fill the table spread needs of the nation. In recent months the production of margarine has been greater than the production of butter. This is a soybean oil market which offers tremendous possibilities for the future, and one in which the soybean industry should be very definitely interested.

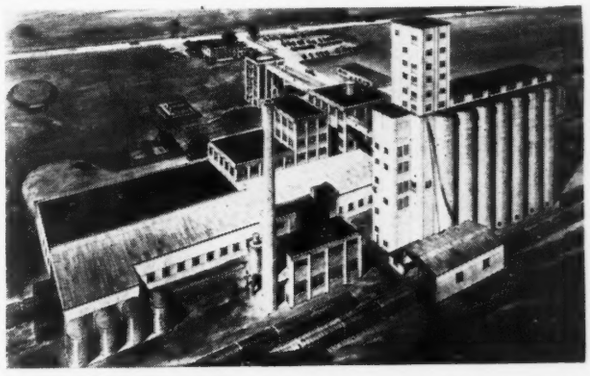
Since 1941 the American Soybean Association has repeatedly gone on record in the annual resolutions as favoring the repeal of the federal taxes and license fees on margarine made from domestically produced fats and oils. Based on those resolutions, adopted in the annual business meetings each year, your board of directors elected to participate in the efforts to repeal these discriminatory taxes and license fees on margarine made from domestic farm products.

Your board of directors took that action after carefully surveying the situation. Butter was both scarce and high priced. Supplies were declining. Consumer pressure for repeal of the taxes and restrictions was building up. Consumers of farm products comprise about 82 percent of our population, and we figured that if the margarine markets were to be preserved for the American farmer it would come only by capitalizing on the current interest in tax repeal. It was our considered opinion that the consumer would be placated by removing the taxes on our domestically produced materials, and that at the same time we would achieve our long-time aim by preserving the American market for the fats and oils produced in this country. We felt that every other fats and oils group had a joint stake in the matter, including the manufacturers of butter. Some of those groups did not see things the same way we did.

You know what happened. Five representatives of ASA appeared before the committee on agriculture of the House of Representatives at the hearings to consider HR 2245 and margarine legislation. We testified in behalf of legislation which would remove the tax only on margarine made from domestic fats and oils. The committee voted to table all margarine legislation. For the first time in 62 years of margarine tax repeal attempts a sufficient number of signatures was placed upon a discharge petition to bring the Rivers Bill, HR 2245, to a vote on the floor of the House. It was passed. It went to the Senate, where it was referred to the finance committee, was reported out by a unanimous vote with recommendation that it be passed immediately. It died on the floor of the Senate, awaiting action at the end of the session.

Your president, your secretary and other members of the board of directors and the membership spent a vast amount of time working on that legislation, attempting to direct in the manner in which we thought it should go. We worked very closely with the officials of the National Cotton Council, and may I say here and publicly that we both enjoyed and profited by that association. We had the utmost confidence in them and their actions, and found that confidence to be justified in every respect. It will suffice to say that in the period between January 1 and September 1 your secretary

WE WANT YOUR SOY BEANS

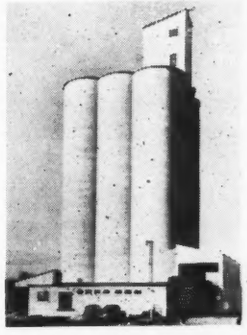


Above is our new Soybean Extraction Plant now in full operation at

KANKAKEE, ILLINOIS

Phone: Main 6800—Kankakee

W. A. Sommer, Mgr.



CHICAGO OFFICE

Steve Babirak, Grain Buyer and Meal Salesman

Room 1309 — Bankers Building

Phone: Franklin 5601—Chicago

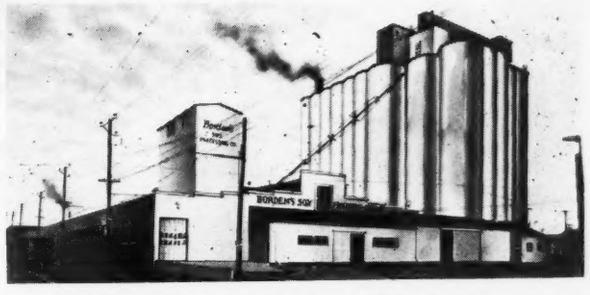
Above is our new storage elevator on Lower Hawkeye Avenue

FT. DODGE, IOWA

Phone: Walnut 1755

Francis Hanson

Manager



Above is our processing plant at Waterloo, Iowa.
Floyd Paisley, Bean Buyer

Borden's Soy Processing Company furnishes a reliable cash market for your soybeans. It will pay you to get our bid on any you have to offer.

Borden's Soy Processing Co.

DIVISION OF THE BORDEN COMPANY

WATERLOO, IOWA

C. E. Butler, President — PHONE 7531—WATERLOO — Ed O'Connor, Manager

made 12 trips to Washington, most of them on legislative matters.

Congress meets again in January. The margarine battle must be fought all over again. We must start at the very beginning, take a bill through the various hurdles in the House of Representatives and in the Senate. It should come easier this time, but the opposition forces are girding themselves for the battle and will be no push-over. It appears that the federal taxes and restrictions on margarine are going to be removed because the consumer wants them removed. It appears that they will be removed not only on domestically produced fats and oils, but on all margarine. We have two alternatives. One is again to make every possible attempt to obtain passage of a bill applying only to margarine made from American oils. The other is to allow the legislation to go on through, then by some other means control the importations of edible oils from other parts of the world so that American soybean oil, cottonseed oil, corn oil and other edible fats have first chance at the margarine and shortening markets. The new board of directors will be faced with the decision as to which course they are going to follow. It will not be an easy decision.

There are other legislative activities which will require time and attention. Some pertain to the use of soy flour in bakery goods. Others apply to increased appropriations for soybean disease study and for marketing studies. It will be necessary to keep in constant touch with governmental policy on exports of soybeans and soybean products. The legislative program of the Association must become an ever-increasing part of the over-all association activities. The American Soybean Association will be expected to represent the industry in such matters, and we must be prepared to do so.

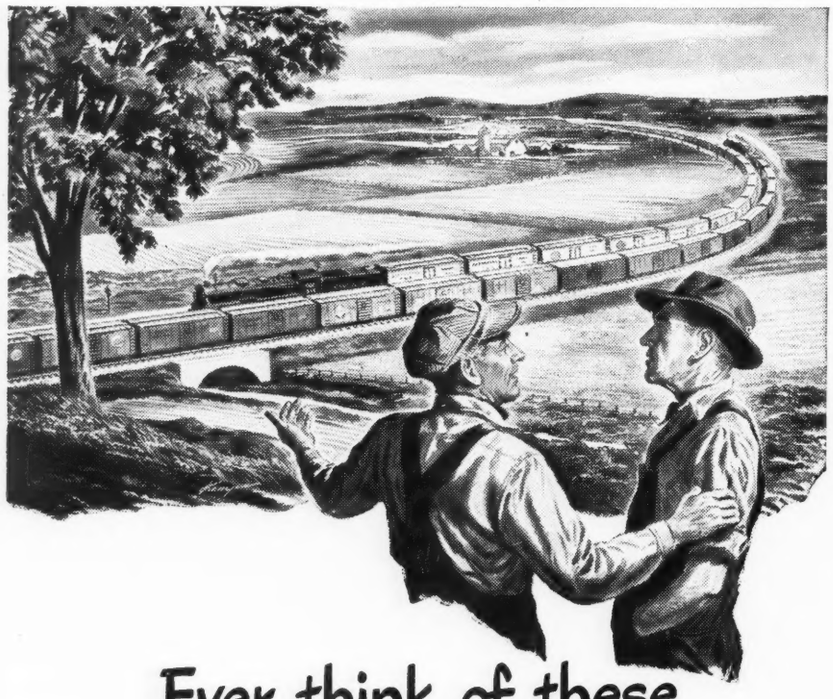
Field Service Division

At the 1947 convention of this organization you voted to the board of directors full power to establish such organization and staff as were necessary to provide for the soybean industry an adequate program of financing, in terms of the educational legislative and promotional needs of the industry. At that time negotiations were being carried on with another organization in the industry in an attempt to build a co-ordinated program with representation from all phases of the industry. That organization was not interested in joining us in our plans, or in an over-all plan to be worked out jointly. When that became evident your board of directors voted to proceed with our own organizational work. That has been done. Progress has been slow—we have had to start from scratch, get experience and knowhow as we went along, build our plans, our materials, our procedures as we learned.

On May 1 Mr. Paul Hughes was employed as field service director of the American Soybean Association. After becoming acquainted with the Association and the plans for his department, he started making contacts. The plan which had been evolved by a committee from the board of directors included personal contacts with country elevator operators, explaining our plans, and requesting that the elevator serve as the collection agency for a levy of one-fifth cent per bushel which is to be paid by the grower of soybeans when he sells his crop. Our first contacts were made in the state of Ohio, where we gained experience, along with some signed contracts.

Mr. Hughes then moved into central Illinois, where he has been located since shortly before July 1. The response has been good, and at this time there are nearly 150 elevators which have signed agreements to make the deduction from remittances on 1948 crop beans. There have been some elevator operators who were not in sympathy with our plans, some who did not want to take the trouble to make the deduction. Others just did not want to cooperate. However, we consider that the response from elevators has been very satisfactory, and we will watch the returns of the program very closely during the harvest season so that we can make our program even more effective during the following year.

There must be a great deal of follow-up work done with growers and elevator operators, of course, to make the program really successful. We have launched a publicity campaign in those areas covered by agreements, and we are going to do everything possible to acquaint the grower of soybeans with our program and what it will do for



Ever think of these as Farm Implements?

Modern farmers, with their efficient and highly specialized implements, harvest crops *fast*.

Consequently, railroads must be prepared to handle heavy movements from the time harvesting begins. This requires the skillful and efficient use of another kind of "farm implement"—railroad cars—upon which farmers and the nation depend to get crops to market.

To do this essential job, the railroads have been acquiring new rolling stock as fast as it could be manufactured. Since the end of the war they have built and bought nearly 200,000 new freight cars. And they have on order another 100,000 cars, or close to a full year's output for the railroad car builders.

These cars are just a part of the vast railroad renewal program which includes progressive improvement also in motive power, roadbed and signals, materials and methods—to the end that the American railroads shall continue to provide the most economical, the most efficient, and the safest transportation in the world.

Association of American Railroads
WASHINGTON 6, D. C.

But who wants to play Blind Man's Buff?

There are two ways of walking through a manufacturing plant. *One* is to be alert to see the hidden losses that eat into profits, and be ready to correct them. The *other* is to be blind to outmoded operations, simply because they are familiar.

An outmoded packaging method can cause appalling waste in production and profits. Yet the remedy may be easily yours. A St. Regis Packaging System provides St. Regis multiwall paper bags and St. Regis packers to fill them. This efficient team eliminates manual operations, reduces storage space, cuts container costs.

Over 400 commodities are now being packed in St. Regis multiwalls. Are your products among them? A St. Regis sales office near you will welcome discussion.

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him. He must know about the deduction before he markets his crop if our program is to be really successful.

We have set a goal of $40,000 to be collected from 1948 crop beans. We may or may not reach that goal. We should immediately make plans to enlarge our program to the point where it will cover all the main soybean production areas of the nation by the time the 1949 crop begins to move. Then, and then only, will we have launched an effective program of financing which will enable the soybean industry to be represented in promotional, legislative and educational activities as it should be represented. Then we will begin to speak for the grower of the soybean crop with a voice of authority.

Enlargement of the program will mean more field men, more office records, more travel, more printed material, more responsibility on the part of the board of directors. For that the new board of directors must provide.

Assuming that the work of the field service division progresses as well as it now seems it may, funds will become available following the 1949 crop movement to do many of the things which have been needed in the industry for years, but for which there has been no financing. Membership on the board of directors of the American Soybean Association will carry with it much greater responsibility than ever before.

At this point I would like to pay tribute to the man who has served as president of the American Soybean Association during the past year. Ersel Walley has given unstintingly of his time, he has traveled day after day in behalf of the Association, has made many sacrifices from his own business in order to promote the welfare of the Association. He has spent, according to our calculations, well over 2 months of time, not counting the time he spent on his European trip, working directly for you. For that time he has not received a single cent of compensation. He has spent his own funds in travel and for phone calls, for much of which he has not been reimbursed. I personally feel that he has gone far beyond the responsibilities which his position dictated, to his own personal sacrifice, and that the American Soybean Association has been extremely fortunate in having Mr. Walley in the presidency during this past year. Words sometimes fail to express true sentiments, and this happens to be one of the times when they are inadequate. I feel sure that most of you do not begin to realize the sacrifices in time and effort which your president has made in behalf of the American Soybean Association this year.

Financial Status

For the first time since I took over the secretaryship of the Association in 1941, your organization has operated in the red this year. But that is really not as bad as it sounds. We have expended about $3,000 in launching the field service program, and those funds came from the regular funds. At the same time we have a good many supplies on hand which show up in the inventory at their cost price, and which today should be valued considerably higher because of price increases. It has not been a good financial year, but has been satisfactory. There have been, of course, expenditures in time of the office staff, supplies and other items which have not been charged to the field service division, but which have gone into that program. There have been no receipts from that program, but the returns from the contacts will be forthcoming after the new crop begins to move. The expenses of making the contacts show up in this year's financial report, and the returns will show up in next year's report.

I will not attempt to give a complete financial review, but copies of the profit and loss statement and the financial statement are available for those who desire them.

In closing let me reiterate something which your president has so effectively said before, but which bears repetition. When the chips are down, the price received by the farmer will determine the acreage of soybeans. The major function of the American Soybean Association should be that of doing everything within its power to place soybeans in a favorable price relationship with other crops. By so doing, soybean acreage will be maintained, processing mills will continue to operate, the true values of the protein and the oil contained in the crop will be made available to the peoples of the nation and the world. Our job is cut out for us.

GEO. M. STRAYER,
Secretary-Treasurer.

"Hop on a Humphrey"

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Stair-climbing causes delays — irritates employees — eats up profits. It's so much more efficient to "hop on the Humphrey" — always on the move, up one side, down the other.

Endless Belt Elevator
SAVES MAN HOURS

ALWAYS SAFE: Any passenger can stop it instantly by simply pulling the control cable at the side. Automatically stops if rider fails to step off at top floor. The Humphrey is the original endless belt elevator — hundreds in use for many years in flour mills and elevators. Can be installed in old or new buildings. Write us stating your requirements and we will furnish full information, blue prints, prices. Circular on request.

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Resolutions

We, the committee on resolutions, present to the 18th convention of the American Soybean Association the following resolutions for its consideration:

I.

RESOLVED, that we offer to the soybean growers of America the following statements which we believe to be consistent with the permanence and economic importance of the crop:

A. The soybean crop now ranks as a major source of protein meal and edible oil in the United States.

B. We believe it important that the public be informed of the dollar value of the edible protein and fat in soybeans as related to other exportable grains. We are convinced that the American taxpayer is receiving a higher value for his tax dollar in offering soybeans to help the undernourished peoples of Europe.

C. We hail the increasing interest of the American people in a balanced diet. Soybeans and soybean products have in the past and can continue in the future to contribute to this trend. We therefore urge greater efforts to acquaint the American

public with the merits of soybean products in relation to both human and animal nutrition.

II.

RESOLVED, that this Association favors the exportation of reasonable amounts of whole soybeans for the following reasons:

A. The 1948 crop is estimated to be the largest in history, which would overtax all available storage capacity.

B. We believe that now is the psychological time to captivate the interest of the potential markets of Europe in American soybeans.

C. The exportation of a portion of this year's large crop will certainly stabilize prices and encourage American growers to maintain an average sufficient to meet future domestic and foreign demands.

BE IT FURTHER RESOLVED, that the Association favors the exportation of soybean products, including soybean meal, soybean oil and soy flour, whenever conditions at home and abroad warrant such exportation.

III.

RESOLVED FURTHER, that the allocation of soybeans for export be made at once to facilitate the orderly marketing of the 1948 crop. We are convinced that the European Recovery Program funds can be invested in soybeans with greater advantage to the American taxpayer than in any other American food products.

IV.

RESOLVED that, in view of the fine cooperation and assistance on the part of the National Cotton Council and allied groups in the legislative efforts of the Association

A mixture of salty humor, gay and entertaining stories and a pungently expressed philosophy. That was the talk of Clayton Rand, Gulfport, Miss., publisher who was ASA convention speaker. Rand's title was, "Jack and the Beanstalk."

The Soy Bean, miracle of modern farming, has become in one generation a prime factor in agriculture and industry of America, particularly of the four midwest states served by **THE MINNEAPOLIS & ST. LOUIS RAILWAY**

Illinois, Iowa, Minnesota and South Dakota in 1947 harvested 6,734,000 acres of Soy Beans, just half of the total United States acreage, and produced 105,881,000 bushels or 58 per cent of the nation's crop of 181,362,000 bushels. Illinois, the No. 1 Soy Bean grower, harvested 65,196,000 bushels, more than double the production of any other state. Just 25 years ago, the United States planted only 400,000 acres.

The M. & St. L. Railway, specialist for 77 years in service to agriculture, is a leader today in transportation of Soy Beans and the scores of products made from them in the Midwest's big processing mills.

Soy Bean is called the miracle plant because of its manifold uses and the rapidity with which it has become a major farm crop. From Soy Beans are made industrial oils for paints, varnishes, lubricants, soaps, cosmetics and other uses; edible oils for salad dressings, margarine, shortening and cooking; flour; meal for stock and poultry feeds; plastics in wide variety; and many other products.

The M. & St. L., a modern, efficient freight railroad, networks some of the richest Soy Bean growing areas and directly serves five great processing plants. To Soy Bean growers and manufacturers, it furnishes the same Fast, Dependable Freight Service it has provided since 1871 for other products of midwest agriculture and industry.

THE MINNEAPOLIS & ST. LOUIS RAILWAY CO. — THE PEORIA GATEWAY

The **Minneapolis & St. Louis**

RAILWAY

TRAFFIC OFFICES IN 36 KEY CITIES

to broaden the utilization of soybean products, we express our appreciation and gratitude for such assistance.

V.

RESOLVED, that while we appreciate the attention given to scientific research by both government and private agencies, the American Soybean Association believes that still greater attention should be given to improving the digestibility of soybean proteins in livestock feeding; to use of soy flour and soy oil in human nutrition; and to expand the uses of soybean derivatives in industry.

BE IT FURTHER RESOLVED, that the Association cooperate with the administrators of the Hope-Flannagan Research and Marketing Act in furthering these research projects in the soybean field.

VI.

In view of the tremendous import of the National Research program to the American soybean grower:

BE IT RESOLVED, that we petition the Administrators of the Hope-Flannagan Act for greater numerical representation of soybean growers on the Soybean and Flaxseed Advisory Committee.

VII.

RESOLVED, that the Association renew its insistence that the soybean and soybean products be allowed to compete on their merits with all other agricultural and livestock products from American farms. In furtherance of this policy, the Association demands the repeal of all regulatory taxes and controls—local, state or federal—which would discriminate against the use of edible products made from domestic oils.

VIII.

WHEREAS, the Association has established a program to finance an educational, promotional and legislative campaign for soybeans through direct contributions from growers collected by their marketing agencies,

BE IT RESOLVED, that our membership encourage individual participation in this program in their respective communities.

IX.

FINALLY, BE IT RESOLVED, that the Association express its profound appreciation and gratitude to the following, whose services have contributed so much toward the success of this convention and to the effective work of the Association during the past year:

To the City of Memphis and the Memphis Merchants Exchange, and in particular the convention committee of that group, composed of A. A. Williams, J. M. Trenholm, J. S. Buxton, Ed Jappe, Fred C. Lovitt, G. C. Carter, A. J. Sumner and Wm. B. Morgan.

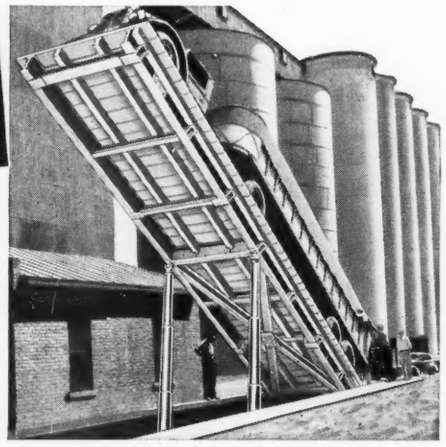
To the ladies committee of the Merchants Exchange, Mrs. A. A. Williams, Mrs. McGhee Moore and Mrs. Lee Canterbury. To the Memphis Chamber of Commerce and Mr. Martin Zook, chairman of the agriculture committee.

To J. H. Crain, trustee and general manager of Lee Wilson & Co. Estate, for his generous hospitality in entertaining the Association at his plantation; to the University of Arkansas, to Dr. R. P. Bartholomew, assistant director of the Arkansas Experiment Station; to Dr. Roy Adair, U. S. D. A., Stuttgart, Ark.; John Dameron, director of Arkansas Cotton Sub-Branch Experiment Station, Clarkedale, Ark.

To the Interstate Bag Co., Wilson, Ark., for entertaining the ladies with a luncheon; to the host of exhibitors at the convention; to the Memphis press and other local publications for their splendid news coverage; to the Hotel Peabody and other Memphis hotels for their fine entertainment facilities;

To the American Soybean Association convention committee composed of George M. Strayer, Jacob Hartz, Sr. and Jacob Hartz, Jr.; to the officers, directors and staff of the American Soybean Association, and in particular to President Ersel Walley and Secretary George Strayer, for their unstinted efforts during the past year in promoting the interests of the Association and the entire soybean industry; to the speakers and to all others who have contributed to the success of this convention.

Kewanee Hydraulic Dumper



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- Keeps Trucks "on the go"
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UNLOADS all sizes of Trucks and big Tractor Trailers in a "jiffy." Takes all the time-stealing hard work out of unloading . . . eliminates waiting time and keeps trucks on the go.

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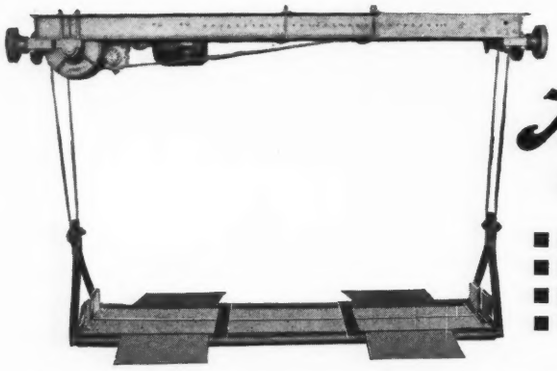

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ENGINEERED for easy operation and dependable performance, backed by 30 years' know-how in the grain trade.

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Lifts 7 feet in 6 seconds. Adjustable to lesser heights for low driveways.

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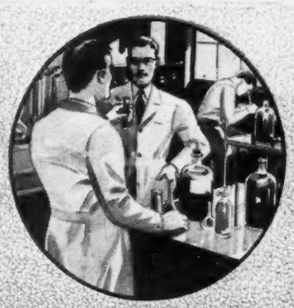


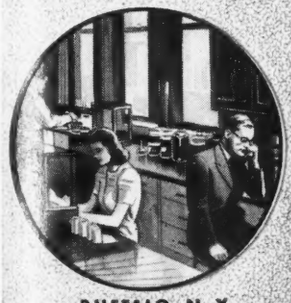
BELLEVUE, OHIO

DES MOINES, IOWA

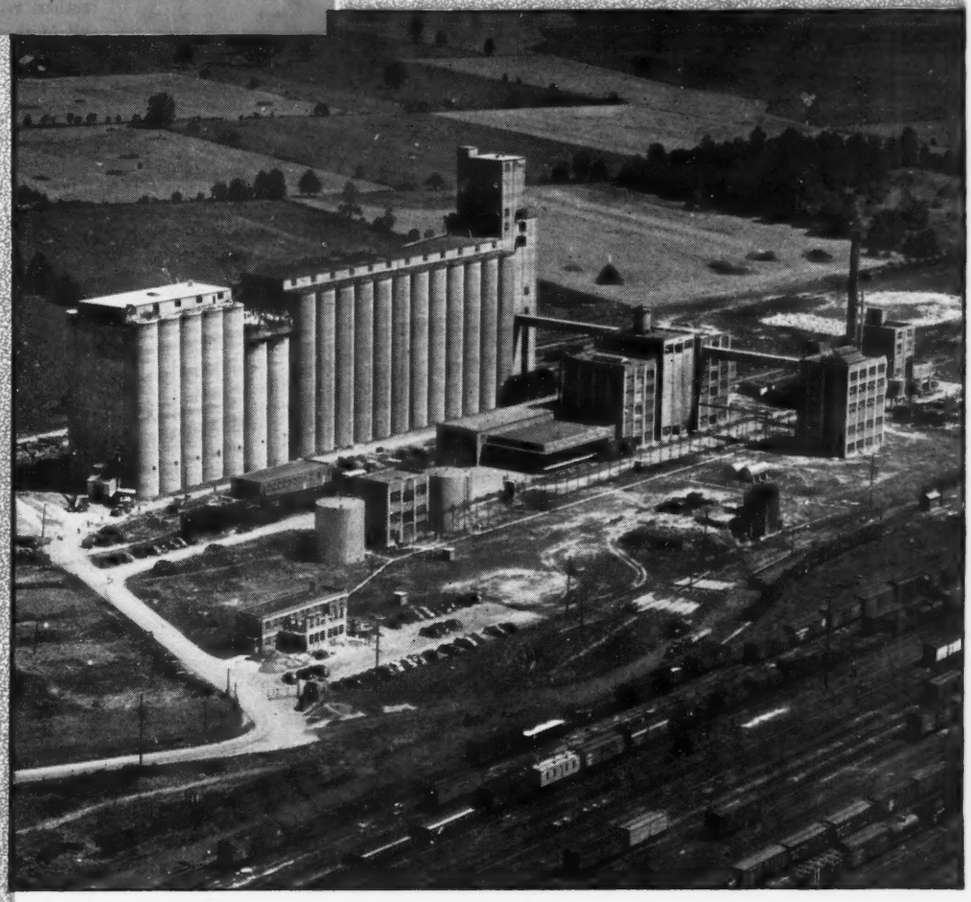
DECATUR, ILL.

CHICAGO, ILL.

MINNEAPOLIS, MINN.



BUFFALO, N. Y.



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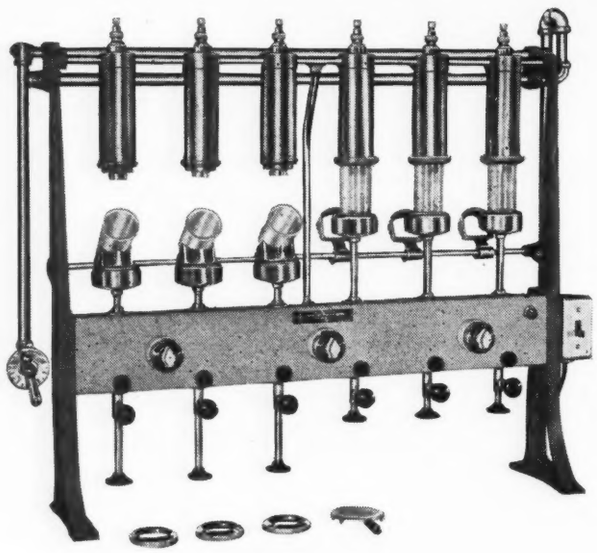

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MILNER

(Continued from page 32)

cent cephalin, and 40 percent inositol phosphatides. It is evident that the amount of inositol phosphatides has been grossly underestimated by previous workers and that these phosphatides have been lumped with the cephalin or alcohol-insoluble fraction. Our results also indicate that the sugar (probably galactose) which always accompanies phosphatides is not chemically combined with any particular constituent, but rather is loosely bound and absorbed on all of them. With these successful preliminary results, we are continuing our work and hope to unravel at least a part of this complicated problem.

Another phase of our work on soybean oil stability carried out under the Research and Marketing Act involves a contract agreement with the University of Pittsburgh. That group, under the general direction of Drs. Longnecker and Daubert, has had marked success in attempting to isolate the particular substances responsible for off-flavors in soybean oil. Through the Research and Marketing Act contract, the work at Pittsburgh will be financed and continued. The results will complement those obtained at our laboratory.

As I told you earlier, I have attempted only a partial and brief survey of our work on soybeans. To obtain the full picture, you would have to come to the Laboratory, see the apparatus, and talk with the workers. I hope that it may be possible for all of you to visit us. We value and appreciate your support and cooperation in the continuance of our work and next year we hope again to present additional tangible results of our research.

—s b d—

KONEN

(Continued from page 44)

year, it seems probable that 30-40 percent as much soybean oil will be used as linseed oil compared to a few percent prior to the war.

This tremendous increase in the utilization of soybean oil did not just happen. Sustained research has led to the development of modified soybean oils which are incomparably better than soybean oil itself in their speed of drying, hardness of films and flexibility of usage in the hands of competent technologists. These new developments in soybean oil technology have led to a diversified group of specialized drying oils which cover the whole gamut of industrial application.

However, we cannot regard the job as completed—it has really only begun. Many competitors for soya oil's hard-won place are apparent. It will take the best combined efforts of grower, chemist and processor to prevent usurpation. A continued program directed toward most economical production and processing is necessary to keep the utilization of soybean oil in industry on the increase.

120 ELEVATORS IN HEAVY BEAN AREA

BACK ASA SOYBEAN PROMOTION PROGRAM

Over 120 elevators in some of the nation's heaviest soybean-producing territory had signed contracts to participate in the American Soybean Association's promotional program at the time the September issue of the *Soybean Digest* went to press.

Soybean producers in the territory served by the elevators are being asked to invest one-fifth of a cent per bushel from the returns of their 1948 crop in the Association's program. The elevators have agreed to make the collections at the time the soybeans are delivered to them.

Funds collected will be used to promote legislative and educational activities both on national and state levels, thus greatly expanding the program heretofore financed entirely by $2 memberships and by individual contributions.

The signup campaign was launched this summer by Paul C. Hughes, Association field representative, in selected Ohio and Illinois territories. Efforts have been concentrated in a comparatively small territory where soybean acreage is large and where the program can be given a thorough tryout and the "bugs" taken out before another season.

Elevators participating this year are thus pioneers in helping to set up a coordinated nationwide program for the soybean industry. Fourteen Illinois counties and three Ohio counties have been covered by Hughes to date in the drive.

It is planned to cover the entire soybean belt before the 1949 crop begins to move.

Each participating elevator has agreed to collect 20 cents per 100 bushels of soybeans for the account of the Association at the time of sale of 1948 soybeans. An annual statement showing expenditures of funds will be furnished to the elevator. Growers will be given statements of their investment with the American Soybean Association.

No Big Overhead

There is no intention of building up a costly overhead under the program, according to the board of directors. There will be no office opened in Washington. Nor will there be an expensive advertising campaign.

Legislative activities will be expanded. The battle is still to be won in removing restrictions on margarine, soy flour, and other commercial foods employing soybean products.

A major effort must be made to hold American markets for soybeans and to open up new markets abroad if profitable prices are to be maintained.

Educational work under the new program will be carried on with the federal government and with growers, schools and such organizations as 4-H clubs.

The Association will back research on such important problems as reversion of soybean oil and a quick test of oil content that can be used by the local elevator.

Illinois counties covered by the program to date are: Champaign, Christian, Coles, DeWitt, Douglas, Edgar, Logan, Macon, McLean, Montgomery, Moultrie, Piatt, Shelby and Vermilion.

Ohio counties are Champaign, Franklin and Madison.

Elevators which have signed agreements to take part in the program are:

Illinois Elevators

Acord Grain Co., Kansas; Acord Grain Co., Oakland; Adams Elevator Co., Borten; Adams Elevator Co., Paris; Adams Elevator Co., Redman; Harry Allen Grain Co., Allerton; Alvin Grain Co., Alvin; Assumption Cooperative Grain Co., Assumption; Atwood Supply & Grain Co., Atwood.

Bence Grain & Coal Co., Mattoon; Britton Brothers, Mt. Zion; Building Service Co., Belleflower; Burt Elevators, Urbana.

Catlin Grain Co., Catlin; Cerro Gordo Cooperative Grain Co., Cerro Gordo; Champaign County Grain Association, St. Joseph; Cisco Co-operative Grain Co., Cisco.; I. S. Connerly Grain Co., Pana; Cook & Eckstein, Ivesdale; J. Harry Cox, Cerro Gordo; Cuppy & Wyeth, Humboldt.

Davis Grain Co., Collison; DeLong Elevator Association, Sadorus.

Fairland Grain Co., Villa Grove; Farmer City Grain & Coal, Farmer City; Farmers Elevator Co., Jamaica; Farmers Elevator Co., Penfield; Finson Grain Co., Monticello; Fithian Grain Co., Fithian; Foosland Grain Co., Foosland; Leland S. Fowler Grain Co., Champaign.

Gring & McCord, Inc., Birkbeck; Gring & McCord, Inc., DeWitt; Gring & McCord, Inc., Empire; Gring & McCord, Inc., Farmer City; Gring & McCord, Inc., Fullerton; Gring & McCord, Inc., Kumler; Gring & McCord, Inc., Mansfield; Gring & McCord, Inc., Seymour; Gring & McCord, Inc., Watkins.

Hammond Co-op Grain Co., Hammond;

The WILLIAMS "Meteor" Grinder for SOYBEAN CAKE

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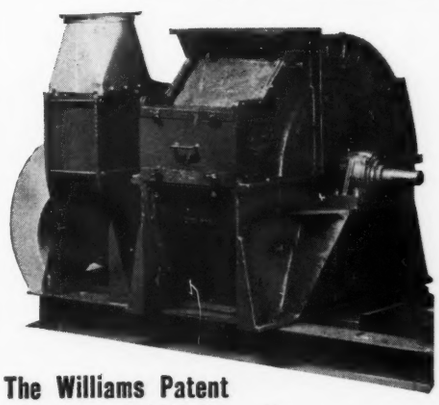

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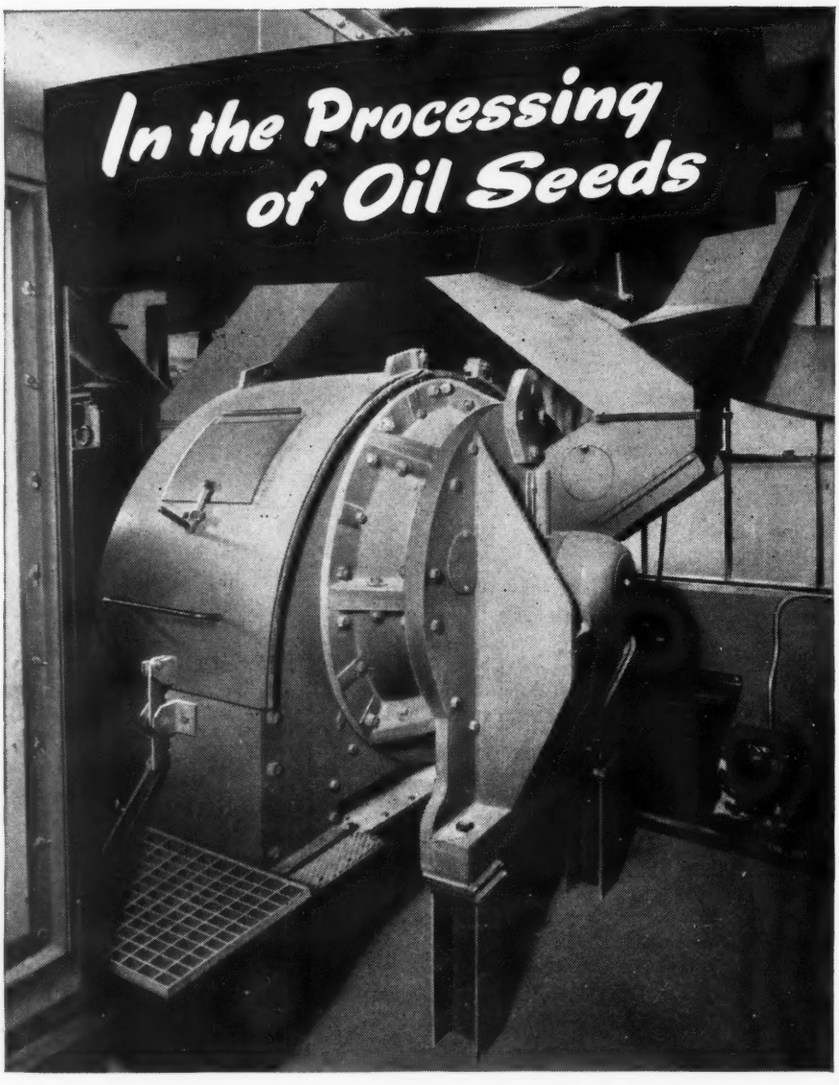

Cooperation

BUILDS THE INDUSTRY

Cooperation . . . an honest effort to work together in the improvement of existing methods and in the development of new processes has built the Soybean industry into what it is today. Having a part in the building of the industry is a matter of policy with Prater . . . for Prater has consistently furnished equipment for efficient material reduction, whether in connection with the mechanical or solvent process.

We're looking forward to seeing you all again at the 28th Annual Convention of the American Soybean Association — Booth 31, Hotel Peabody, Memphis, September 13, 14, 15. If you can't be there, drop us a line. We'll make certain you get full details on the Prater Dual-Screen Pulverizer. The Prater Pulverizer Company, 1527 South 55th Court, Chicago 50, Illinois.

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Harris Grain Co., Farmer City; Hasenwinkle & Co., Bloomington; Hasenwinkle & Co., Bucks Road; Hasenwinkle & Co., Carles Springs; Hasenwinkle & Co., Downs; Hasenwinkle & Co., Gillum; Hasenwinkle & Co., Heyworth; Hasenwinkle & Co., LeRoy; Hasenwinkle & Co., Wapella; Homer Grain Elevator, Homer; Horton & Reeder Grain Co., Ivesdale; V. L. Horton, Tolono.

Ivesdale Cooperative Grain Co., Ivesdale. J. M. Jones, Deney.

LaPlace Cooperative Grain Co., Burrowsville; LaPlace Cooperative Grain Co., Casner; LaPlace Cooperative Grain Co., LaPlace; LaPlace Cooperative Grain Co., Lintner; Leveritt Grain Co., Leveritt; Loxa Grain Co., Mattoon.

McBee Grain Co., Lovington; McBee Grain Co., Prairie Hill; McBee Grain Co., Ulrich; Metcalf Grain Co., Metcalf; Monticello Grain Co., Monticello.

James F. Parker, Mahomet; Pierson Grain Supply Co., Pierson Station.

The Randolph Co-operative Grain Co., Randolph; C. C. Rager, Blue Mound; C. C. Rager, Boody; C. C. Rager, Latham; Rardin Grain Co., Kansas; Rardin Grain Co., Warrington; Rodgers Grain Co., Oakwood.

Sadorus Cooperative Elevator Co., Sadorus; Savoy Grain & Coal Co., Savoy; Shellabarger Grain Co., Dunkel; Shellabarger Grain Co., Elwin; Shellabarger Grain Co., Ohlman; Shellabarger Grain Co., Ospur; Shellabarger Grain Co., Pana; Shellabarger Grain Co., Raymond; Shellabarger Grain Co., Warrenburg; Shellabarger Grain Co., Westervelt; Sidney Grain Co., Sidney; Silver Bros., Urbana; Stonington Cooperative Grain Co., Stonington.

Townada Grain Co., Townada; J. C. Trost & Co., Philo.

Van Zant Grain Co., Dudley; Van Zant Grain Co., Harris Spur; Van Zant Grain Co., Mays; Van Zant Grain Co., Paris; Van Zant Grain Co., Vermillion; Villa Grove Farmers Elevator, Villa Grove.

H. T. Walton & Son, Mayview; Wesley & Rising, Bongard; Wesley & Rising, Brock; Wesley & Rising, Longview; Wesley & Rising, Sidney; W. A. Webb, LeRoy; Williams Grain Co., Filsen; Williams Grain Co., Hindsboro; Williams Grain Co., Kenp.

York & Primmer, Monticello.

C. A. Zelle, Tolono.

Ohio Elevators:

Fred Kile & Son, Amlin; Fred Kile & Son, Kileville.

Max Latham, Unionville Center; Walter M. Latham, Hayden.

Nau Grain Co., Mechanicsburg; Nau Grain Co., Plain City; Nau Grain Co., Urbana.

Ohio Grain Co., Irwin; Ohio Grain Co., Marysville; Ohio Grain Co., Mechanicsburg; Ohio Grain Co., Milford Center; Ohio Grain Co., North Lewisburg; Ohio Grain Co., Woodstock.

Indiana Elevator:

Van Zant Grain Co., St. Bernice.

DROUTH, DISEASE CUT YIELD

Appearance of drouth in some of the heaviest producing sections late in August may cut the record soybean crop of 205 million bushels predicted by the U. S. Department of Agriculture in its report based on August 1 conditions.

Brown stem rot will hurt yields some in leading soybean counties in central Illinois. Weeds are more numerous than usual in many fields. But on the whole the crop is in good condition and ahead of the past several years in maturity for September 1.

The 205 million bushels indicted by August 1 conditions is 13 percent above the 1947 production of 181 million bushels and 52 percent above the 1937-46 average, reports the U. S. Department of Agriculture. The largest crop was the 201 million bushels produced in 1946 from an acreage about the same size as this year.

The crop got off to a uniformly good start in nearly all soybean states. The heavy producing North Central states had an especially good planting season and growing conditions since that time have been all that could be expected. Record and near record yields are anticipated in all the major producing states.

The expected high yields are due, not only to the favorable growing season, but to the large proportion of the acreage which was planted to Lincoln and other high yielding varieties. The crop is well advanced and little freeze damage is likely unless frosts come at an unusually early date.

Both Ohio and Indiana expect good yields with Indiana reporting the highest of record. Conditions in Illinois have been exceptionally favorable, although grasshoppers have been more abundant than usual. Iowa beans have made excellent progress with growth bushy and rank, but the set of blossoms appears to be a little short on some plants.

Yields in the South Atlantic states are expected to be better than average, although the weather has not been quite so favorable as in the Midwest. In Delaware and parts of Maryland, some of the crop was planted late on acreage which could not be planted to corn because of wet weather. There should, however, be sufficient time for the crop to mature unless frosts come very early. In Virginia, rains have been excessive in some localities, but damage so far has been slight. The South Central states have prospects of good yields with the crop well advanced.

Reports of *Soybean Digest* correspondents, for August 28 unless otherwise noted, follow:

ARKANSAS

L. M. Humphrey, R. L. Dortch Seed Farms, Scott, for Little Rock and Scott area: Maturity normal. Ample moisture and very moderate temperatures have been very favorable. Yield outlook somewhat better than average. Total yield higher than 1947. Weed control fairly good in most fields, but some weedy. Neither insects nor diseases have been serious enough to justify measures to combat them. Possibly 10-20% of crop will be stored by farmers.

Wheeler R. Perkins, extension agronomist, Little Rock: (Aug. 30) Maturity normal. Weather and moisture conditions good. Indicated per acre yield one of highest on record. Estimate 20-25 bu. compared to 14 bu. in 1947. More weeds than normal due to plenty of rain. Boll weevil damage 5-10% in southern and central areas of state.

ILLINOIS

Walter W. McLaughlin, McLaughlin Agricultural Service, Decatur, for Decatur area: (Aug. 31) Maturity 110% of normal. Weather dry. Ground cracked open but crop not suffering too badly except on thin soil. Yield outlook good. Beans should be all out of way by frost. Good weed control in most beans planted in rows. Terrible in some fields drilled solid. Brown stem rot disease showing up in places. Beans falling over like frost had hit them. Farmers will store all they possible can but storage space on farms limited.

J. E. Johnson, Champaign, for Champaign and adjoining counties: (Aug. 26) Maturity 2 weeks in advance of 1946 and 1947. Weather extremely dry with very high temperatures. Yield outlook fair, not the bumper crop so much played up in the

SOYBEANS FOR BEANS*

State	Yield per acre			Production		
	Average 1937-46	1947	Indicated 1948	Average 1937-46	1947	Indicated 1948
	—— BUSHELS——			——THOUSAND BUSHELS——		
Ohio	19.4	18.5	21.0	14,843	17,575	19,068
Ind.	18.0	18.5	20.5	18,486	28,176	28,413
Ill.	21.4	18.0	23.5	55,996	65,196	75,552
Mich.	16.0	17.0	18.5	1,358	1,292	1,184
Wis.	14.5	13.0	14.5	449	338	304
Minn.	14.9	15.0	16.0	3,086	13,800	12,672
Iowa	19.8	15.0	22.0	23,406	26,310	31,262
Mo.	14.2	12.0	21.0	5,608	9,900	15,120
Kans.	10.6	8.5	14.0	1,285	1,887	2,534
Va.	14.3	15.0	16.0	902	1,425	1,600
N.C.	11.5	15.0	13.5	2,333	3,915	3,740
Ky.	14.0	17.5	17.0	729	1,908	2,006
Tenn.	11.5	15.5	17.0	447	930	1,020
Miss.	11.3	14.0	14.5	885	1,330	1,522
Ark.	14.0	12.0	18.5	2,296	3,396	4,570
Other States	12.2	13.1	15.8	2,533	3,984	4,499
United States	18.8	16.3	20.7	134,642	181,362	205,066

*USDA August 1 crop report.

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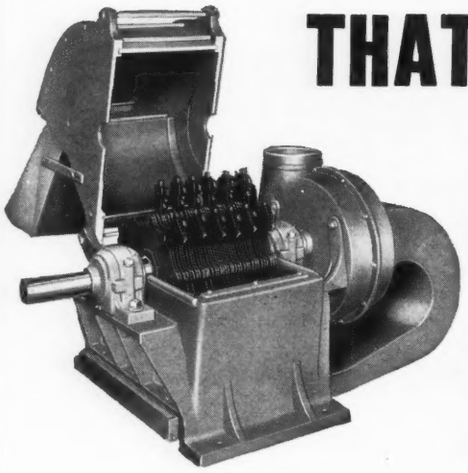

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press. At this date would expect a very slight increase over the good average yields of 1947. Most growers would settle for the 1947 yield due to heavy disease situation that is growing worse every day. Grasshoppers taking heavy toll on outside edges of fields. Expect brown stem rot to cause defoliation of large percentage of fields. Many fields look now as if were getting ripe. Continued extreme heat and no rains, not even heavy dews not conducive to heavy filling of pods. Harvest will be early which should be conducive to increased wheat seeding after the soybean crop. Farmers have worked hard at weed control but weed situation worse than average year. More than usual percentage of crop will be stored by farmers. With probable increase in price by harvest time would not expect high percentage to go into farm storage.

Russell S. Davis, Clayton, for west central: Crop well advanced for season. While it has rained very little in August, soybeans are not suffering for water. Acreage smaller but yield higher than 1947. Only few fields in danger of early frost. Weeds are gaining year by year, especially butterprint. Very few beans will be stored by farmers if price is satisfactory and elevators can take them.

H. I. Cohn, Wright, for west central: Maturity slightly earlier than normal. Weather and moisture conditions excellent. Looks like an average of between 25 and 30 bu. if most are combined without great loss. Total yield at least 30% better than 1947. All beans will be clear of frost by Oct. 15; 95% by Oct. 1. Lots of weeds even in fields cultivated four or five times. No diseases or pests of consequence except grasshoppers where they were ignored. Maybe 10-15% of crop will be stored by farmers.

E. E. Eversole, Hindsboro, for central: (Aug. 26) Maturity 15% over normal. Weather and moisture conditions good. Total yield 25% more than 1947. Sunday, Aug. 22, the writer with other parties drove from Hindsboro to Arcola, Mattoon, Effingham, Flora, Salem, Odin, Ramsey, Pana, Vandalia and Shelbyville, a total of 243 miles. Soybeans look 95% as to height and color and should make a yield above average. None would be caught by earlier-than-normal frost. Weed control is 85% effective. A few grasshoppers but damage not over 3%. 35% of crop will be stored by farmers. Temperatures 95° to 98° for about a week.

W. L. Burlison, head department of agronomy, University of Illinois, Urbana, for central: (Aug. 30) Maturity 7-10 days ahead of normal. Weather and moisture conditions for most part favorable. Yield outlook average or better. Total yield same or better than 1947. Small percentage would be caught by earlier-than-normal frost. Weed control only fairly successful. Brown stem rot most serious disease this year; has appeared earlier than ever before

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● **SOLVENT RENDERING**

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● **BLEACHING**

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● **WINTERIZING**

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● **FAT SPLITTING**

Blaw-Knox offers complete plants employing the new continuous Colgate-Emery fat splitting process. High product purity with low steam consumption is attained.

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—Soybean Digest photo

A field of weedy soybeans in east central Illinois August 18. Volunteer corn and buttonweed are especially prominent. There is much volunteer corn in Illinois bean fields this year. It will make for a dockage problem when sold at the elevators.

and will cause considerable loss—10-20% on fields most severely injured. Farmers will store approximately same amount of crop as in past.

Frank S. Garwood & Sons, Stonington, for south central: (Aug. 30) Maturity slightly earlier than normal. Weather hot and dry. Yield outlook uncertain due to development of brown stem rot in past week. Probably higher per acre yield than 1947. Many very weedy fields. Brown stem rot beginning to show with no way to make an estimate of damage at present time. Fields of soybeans that follow soybeans show heavy infestations. Very little where soybeans used in good rotation. Apparently this section will have to reduce soybean acreage and grow them only in good rotation.

IOWA

Martin G. Weiss, farm crops department, Iowa State College, Ames: (Aug. 25) Maturity normal. Dry weather in central and northern part of state hurrying up maturation. Crop suffering slightly. Yield outlook good, total 18% or more than 1947. 20% would be caught by earlier-than-normal frost. Weed control only fair. Many common weeds, as foxtail. Slight damage from grasshoppers in southwest. No bad diseases.

Leslie M. Carl, state statistician, Des Moines: (Aug. 26) About normal maturity although dry in sections. Crop being pushed too fast. Weather and moisture conditions quite favorable in major bean areas. Yield about 22 bu. per acre indicated Aug. 1, compared with 15 bu. in 1947. Very little would be caught by earlier-than-normal frost. Fields very weedy early but most fields now reasonably well cleaned. About 80% of crop will be marketed by Jan. 1.

Howard L. Roach, Plainfield, for northeast: (Aug. 25) Maturity 10 days early. Weather very dry. Yield outlook 15 bu. per acre. Total less than 1947. Drouth has cut prospective yields 35%.

Otis J. Luttschwager, PMA, Des Moines: (Aug. 26) Maturity 10 days ahead of normal. Weather dry and hot. Yield outlook good. Total 10% above 1947. Weed control fair to good. Grasshoppers prevalent in southern Iowa. 40% will be stored on farms.

INDIANA

Ersel Walley, Walley Agricultural Service, Fort Wayne 2, Ind., for northeast Indiana and northwest Ohio: (Aug. 30) Maturity 1 week ahead. Very hot and dry weather has caused some cut in possible yields. Total yield 120% of 1947. Weed control satisfactory but not startling. Some grasshopper damage. Amount of crop to be stored by farmers depends on price. 60% must go to market.

KANSAS

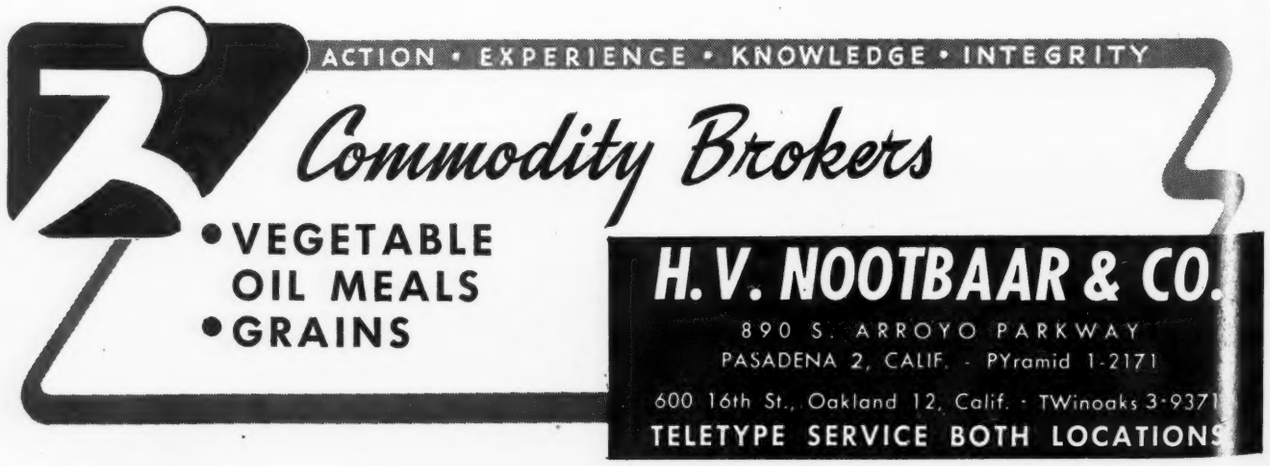
E. A. Cleavinger, extension division, Kansas State College, Manhattan, for eastern: Weather and moisture conditions excellent. Where state average in past has been 10-12 bu., I am estimating state average this year of 14-16 bu. per acre. 2-5% would be caught by earlier-than-normal frost. Fields in general not very weedy. Disease and insect damage low. A few communities do have considerable grasshopper damage. 25-40% of crop will be stored by farmers.

Weekly Crop Report: (Aug. 24) Soybeans making good development.

MINNESOTA

John W. Evans, Montevideo, for southwest central: Maturity advanced. Some fields turning brown now. Weather and moisture conditions excellent. Yield outlook 110% of normal. Yield and acreage increased over 1947. 40% would be caught by earlier-than-normal frost. Weed control fair. Some progress being made. Need inducement to encourage storage of beans on farms at present.

R. E. Hodgson, Waseca, for southeast: Maturity normal. Weather and moisture conditions good. Yield outlook good, maybe a trifle above 1947. 40% would be caught by early frost. Weed control better than usual. Never saw beans look bet-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ter. I would guess 60-70% of crop will move direct to market.

MISSOURI

J. Ross Fleetwood, extension specialist field crops, Columbia: Maturity a little more advanced than normal and much advanced over past 2 years. Weather and moisture conditions excellent in most sections. Yield outlook probably highest per acre on record. Total yield should be higher than 1947. 15% would be caught by earlier-than-normal frost. Some beans quite weedy but ample moisture has reduced bad effects of weeds. Grasshoppers quite numerous in some areas. No diseases of serious nature. Not as many beans will be stored as normal because of high wheat and corn crops.

NEBRASKA

Fremont Cake & Meal Co., Fremont, for east Central: (Aug. 26) Maturity about normal. Weather has been hot and dry. Good rain needed to make big crop. Total yield should exceed 1947 by 10%. Weed control fairly good.

OHIO

G. G. McIlroy, Irwin, for central: (Aug. 26) After hot weather of this week state of maturity about normal. Weather conditions have been excellent since middle of June. Prior to that time some trouble with germination due to lack of moisture. Yield outlook 10% better than last year. Total yield about same. 15% would be caught by early frost. Probably some more weedy fields than usual. Possibly 30% of crop will be stored by farmers.

W. G. Weigle, manager Marsh Foundation Farms, Van Wert, Ohio, for northwest: Maturity normal. Plenty of moisture up to Aug. 20 but recent dry hot weather retarding growth. Some small sections hurt by drought. Yield prospects still look as good or little better than 1947, but total yield will be down. Not more than 20% would be caught by early frost. Some grasshopper damage but not serious. Farmers are talking of storing in available space. They sold their wheat from combine but filled farm bins with oats. Not enough space to store 50% of bean crop on farms.

D. G. Wing, Mechanicsburg, for central: Normal with plenty of moisture up to now when it is getting hot and dry. Beans still look good but last week has been very hot and dry. Per acre yield outlook 15-20% above last year. Total yield above 1947 in spite of smaller acreage. Weeds getting bad in some fields. Grasshoppers in some fields. Not many beans will be stored by farmers if elevators can handle them.

VIRGINIA

Henry M. Taylor, department of agriculture, Richmond: Maturity 100%. Weather generally excellent. Too much moisture in a few areas. Yield outlook very good. Total yield 175,000 bu. above 1947. Weed control good. Fall army worms have caused some damage, probably not over 10%.

WISCONSIN

John P. Dries, Saukville, for southeast: (Aug. 25) Maturity normal. Very dry. Beans showing effects of drought. Yield outlook 75% of normal. Could stand more and better weed control. Grasshoppers becoming hazardous.

CANADA

R. H. Peck, River Canard, Ontario, for southwestern Ontario: (Aug. 26) Maturity normal. Weather very near to ideal on average. Some sections deficient in moisture. Yield outlook seasonably above average, with reasonably good weather for next month. Present prospects double 1947 yield. Not more than 10% would be caught by earlier-than-normal frost. Weed control quite good, partially due to very favorable weather. Some solid drilled fields are suffering somewhat from weeds.

—s b d—

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The Chemical Division of General Mills, Inc. proudly announces the opening of a modern fatty acid processing plant at Kankakee, Illinois in August, 1948. Friends in the technical trade are cordially invited to visit this new plant.

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MISSOURI CONTEST

Entries in the Missouri Soybean Achievement Program, being sponsored again this year by the agricultural extension service of the Missouri College of Agriculture and the Gulf, Mobile and Ohio Railroad closed July 1.

Farmers in Pike, Ralls, Audrain, Calloway, Boone, Howard, Randolph, Saline and Lafayette Counties were eligible to enter.

Growers who produce 30 bushels or more No. 2 soybeans per acre will be awarded the distinguished soybean grower gold medal. Those who produce 25 bushels but less than 30 bushels per acre will be awarded the distinguished soybean grower silver medal.

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Publications

Foods

BEHAVIOR AND FUNCTIONS OF SOY ALBUMEN IN CANDY. By Harold G. Butler, technical service manager for confectionery industry, Central Soya Co., Inc., Fort Wayne, Ind.

Highlights of a talk delivered by Mr. Butler at the annual production forum held at Lehigh University, Bethlehem, Pa., under the auspices of the Pennsylvania Manufacturing Confectioners Association. An informative paper on the use of soy albumen by the candy manufacturer.

Mr. Butler lists the seven basic properties of soy albumen which will prove advantageous in the production of aerated type candy:

1. Soy albumen is produced by chemical processing under sanitary conditions.

2. Soy albumen is a high quality protein food which contains a relatively high percentage of the essential amino acids.

3. The bacterial standards for soy albumen are higher than government specifications for dairy products.

4. As an aerating agent in candy, it produces small uniform air cells of exceptional stability.

5. Soy albumen is not adversely affected by the high temperatures normally encountered in the production of candy.

6. The unusual properties of soy albumen make possible the streamlining of production procedures and reduce material cost at the same time.

7. Soy albumen is unique as an aerating agent in that it is possible to materially improve the quality of aerated candies and reduce costs all along the line by using it. Soy albumen may well be the first vehicle to the profitable sale of the 5-cent bar again.

Feeding

DIETARY INFLUENCE ON THE AMINO ACID COMPOSITION OF PROTEINS. By Frank A. Csonka, Bureau of Human Nutrition and Home Economics, Agricultural Research Administration, U. S. Department of Agriculture, Washington, D. C. *American Society of Biological Chemists Federation Proceedings.*

It was previously shown that the cystine and methionine content of a hen's egg may be increased by feeding a high protein casein diet.

Both crystalline egg albumen and conalbumin have now been prepared from individual eggs laid by hens fed different diets, and their cystine, methionine and total nitrogen contents determined. The results show that the amino acid composition of these proteins is influenced by the hen's diet. It was also found that the nitrogen content of the crystalline albumin obtained from eggs produced by hens fed high protein diets was higher than that produced on low protein diets.

The conalbumin of eggs produced by hens fed a high protein soybean diet contained a higher nitrogen content than when fed at a lower protein level.

A significant drop in methionine percentages occurred in both egg albumin and conalbumin when the diet was changed from low to high protein soybean diet.

SOYBEAN MEAL FOR PIGS. *Mississippi Farm Research.* Delta Experiment Station, Stoneville, Miss.

A preliminary trial was conducted with soybean oil meal providing 30 percent of the feed for growing fattening pigs. One lot of eight pigs was fed a mixture of 70 pounds of corn and 30 pounds of soybean meal. Another lot was fed a mixture of 90 pounds of corn, 5 pounds of tankage and 5 pounds of cottonseed meal.

The pigs receiving the large amount of soybean meal made greater daily gains and produced 100 pounds of gain from 52 pounds less feed than the tankage fed group. The soybean meal fed pigs produced a pound of gain at less cost and returned a greater profit per head over feed cost.

Breeding

INHERITANCE IN A SPECIES CROSS IN THE SOYBEAN. By L. F. Williams, U. S. Regional Soybean Laboratory, Urbana, Ill. *Genetics.*

In 15 crosses between the domestic soybean and the wild soybean seed size was found to be geometric in inheritance. Neither the large size of the domestic parent nor the small size of the wild parent was recovered in over 4,000 F_2 plants nor in the first backcross generation. In the BC_1S_1 and in the BC_2 the size of the larger recurrent parent was recovered.

The percentage of oil was about intermediate in the F_1, but neither the high oil content of the domestic parent nor the low oil content of the wild parent was recovered in the F_2 generation. The protein content of the F_1 was very close to that of the wild (high) parent, and some F_2 segregates had even a higher protein content.

The F_1 had the prostrate and vining habit of the wild parent, and the erect habit of the

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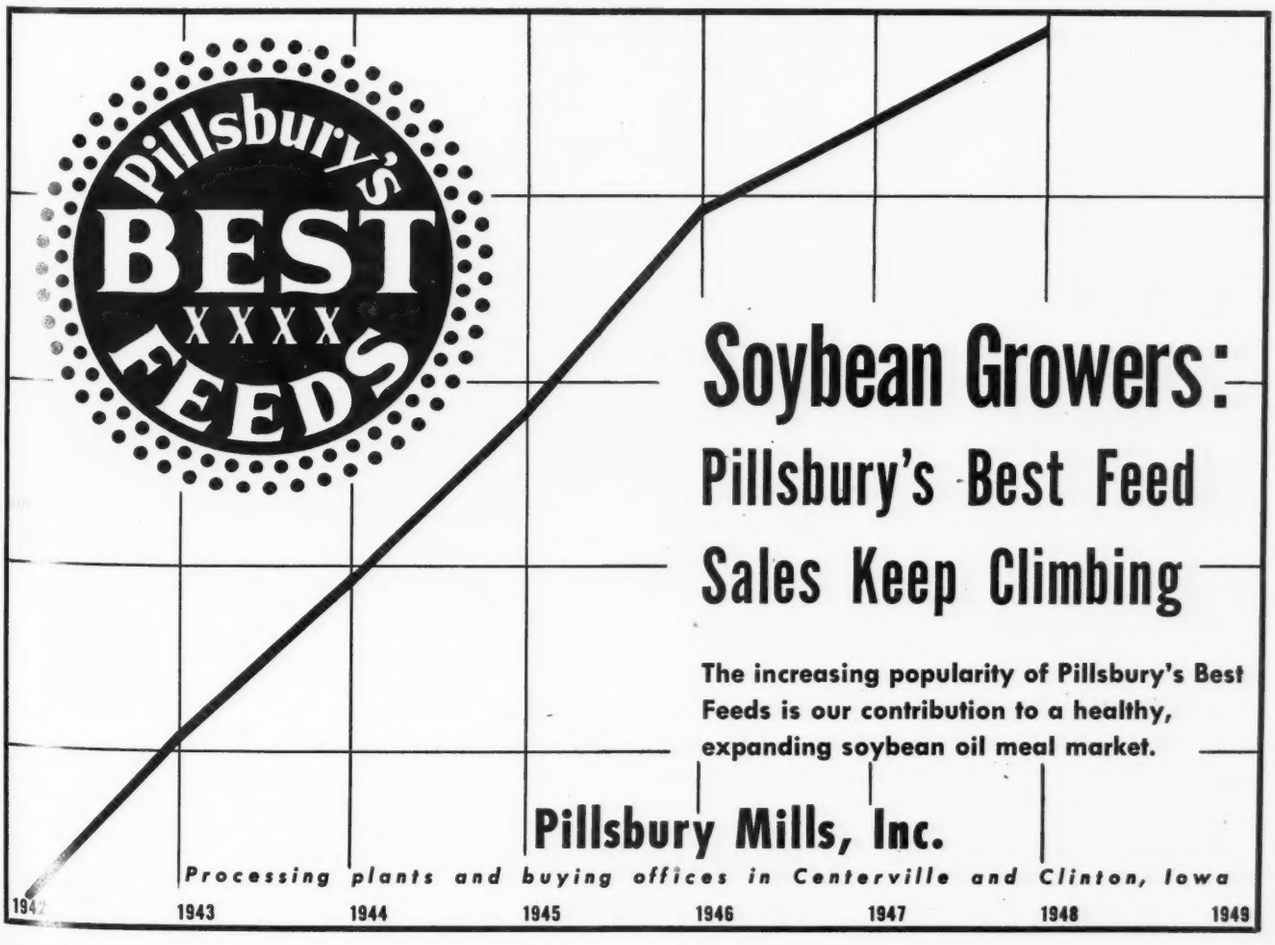

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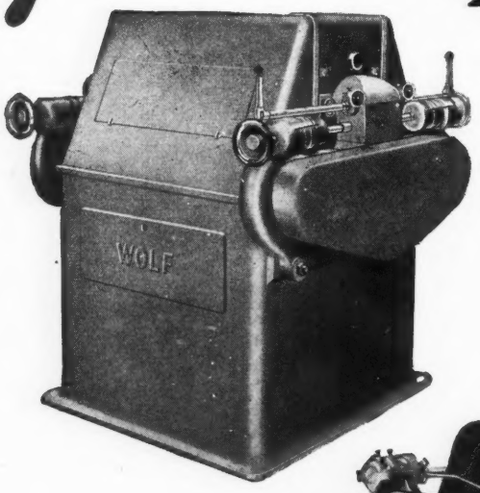

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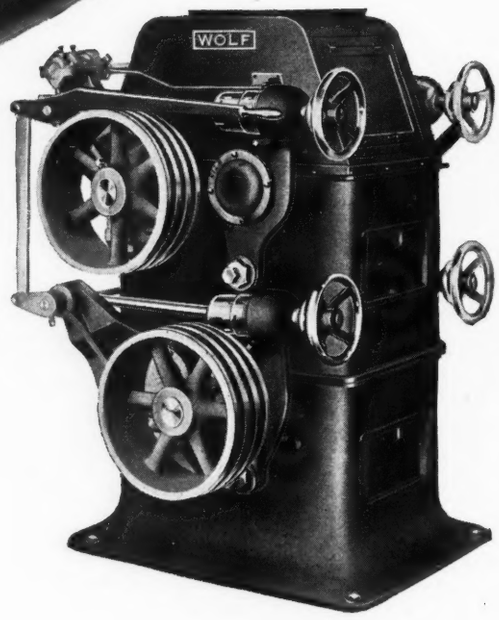

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domestic parent was not recovered in the F_2 or F_3 generation or in the BC_1.

The maturity of the F_1 in most cases was intermediate to the parent, but in F_2 transgressive segregation in both directions was observed. Most of the strains of the wild soybean appear to have a chromosomal arrangement different from the domestic type and resulting in approximately 50 percent abortive pollen and ovules in the F_1 generation.

The wild type evidently carries the gene G for green versus yellow seed coat, but this is obscured by the black coat of the wild type.

Protein

HYDROLYTIC TREATMENT OF SOYBEAN PROTEIN WITH PAPAIN. By Vernon L. Johnsen and Allan K. Smith, Northern Regional Research Laboratory, Peoria, Ill., in *Cereal Chemistry*.

There are a number of food and industrial applications for soy protein where various degrees of hydrolytic treatment are desirable, either for modifying the physical properties of the dispersed protein or for increasing its dispersibility in mild alkalies or water.

The authors have made a study of the effect of papain on the solubility of soy protein determined at its isoelectric point. The substrate system was the water extract of soybean oil meal. While the pH of maximum activity was found to be about 8.0, there was good activity in the region of pH 5.0 to 9.0. Proteolysis proceeded rapidly without the use of activators. Hydrogen peroxide, sodium peroxide, and sodium hypochlorite were good deactivators for the system. Ninety-five percent of the protein became water soluble at pH 4.2 in 3 hours at 60° C.

Sunflowers

OIL FROM SUNFLOWERS. By A. E. Haarer. *Country Life* (England).

The author believes that vast acreages of sunflowers may be grown in the future in order to increase the British supply of fats. Attempts are now being made to grow sunflowers in England, with processing centers at Chipperfield and Leicester.

Most cultivated areas in the world now produce some sunflower seed, with Russia first and Argentine second.

Sunflower oil is primarily a food oil but is also classed as a semi-drying oil.

The author describes sunflowers as a crop, their advantages and drawbacks for the British.

A REMARKABLE BEAN IS THE SOY. By T. Swann Harding. *American Journal of Pharmacy*.

A popular account of the soybean crop and its uses. Based largely on the work done at the Northern Regional Research Laboratory.

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SOYBEAN FESTIVAL AT PORTAGEVILLE, MO.

A National Soybean Festival and Exposition climaxed by the selection of a Soybean Queen will be held at Portageville, Mo., Sept. 22-25, Joseph A. De Lisle, president of the Portageville Junior Chamber of Commerce, has announced.

"Promotion of the soybean, not only with respect to its cultivation and harvesting, but its varied uses in industry, is the aim of the group in arranging the festival," according to De Lisle. The event is being sponsored by the Portageville Jaycees.

The four days of activities will include discussions of the agricultural phase of the industry, actual field demonstration of soybean combining by farm equipment firms, exhibits by 4-H clubs, a parade, band concert, and carnival.

A grand ball will follow the naming of the Soybean Queen. Three prizes of $500, $300 and $100 will be awarded at this contest.

Speakers will include William J. Murphy, field crop specialist from the Missouri Department of State. He will be on the program the afternoon of September 24.

—s b d—

U. S. WOMEN BUY MPF

Thousands of American housewives are turning to Multi-Purpose Food, the highly publicized "3c meal" in the domestic "Battle of the Budget," reports Meals for Millions Foundation, Los Angeles. MPF was developed by Dr. Henry Borsook of the California Institute of Technology, primarily for use overseas. It is now being extensively used for this purpose by welfare agencies active in famine relief in Europe and Asia.

The announcement of the unexpected domestic demand for the new soy-based food was made by Clifford E. Clinton, president of the non-profit Foundation. More than 5,000 mail orders from all over the nation were received less than a week after the August *Ladies' Home Journal* published an article in which a housewife records how, by using MPF, she saved $8 on her monthly food bill.

The Foundation, which provides the food in bulk shipment at 3c a meal to relief agencies and donates such agencies one meal for each 3c public contribution, has hitched the domestic demand to its foreign relief program by offering a two-meal, postage-prepaid sample to Americans for 25c or "free with a $1 contribution to the famine relief program."

The Foundation reports that nearly 13 million meals of MPF have been distributed in 21 countries in the 2 years following introduction of the new food.

—s b d—

AGRONOMY HEAD

Dr. J. B. Peterson, formerly a professor of soils at Iowa State College, assumed his new duties as head of the department of agronomy at Purdue University, Lafayette, Ind., July 15. He succeeds Dr. N. J. Volk, who formerly was both head of the department of agronomy and associate director of the Agricultural Experiment Station, but is now devoting his full time to the experiment station work.

The new agronomy head received his B.S. degree from Oregon State College in 1928. He took a position on the teaching and research staff of Iowa State College and received his M.S. degree there in 1929. He earned his Ph.D. degree in soil fertility at Iowa State in 1936.

Dr. Peterson was a national research fellow in geology at the University of California during the year 1939-40. He has done outstanding research in soils and has published several excellent research papers and popular articles.

—s b d—

LIFE MEMBERS

(Continued from page 24)

training was taken at Oklahoma A. and M. College and the University of Wisconsin. He received his Ph.D. from the University of Wisconsin in 1920, with a major in genetics and minors in botany and zoology. His thesis topic was, "Inheritance of cotyledon, seedcoat, hilum and pubescence colors in soybeans."

Before coming to the University of Illinois he was: assistant in agronomy, South Dakota State College; assistant, U. S. Department of Agriculture; assistant and instructor in genetics, University of Wisconsin; and assistant pathologist, U. S. Department of Agriculture.

He became assistant professor of plant genetics at the University of Illinois in 1920 and has been associated with the University since. He is now professor of plant genetics.

He has been a member of several important committees of scientists, plant breeders and federal agencies. He is author or co-author of a long list of publications on the breeding and growing of soybeans and other farm crops.

Dr. Woodworth's scientific activities are in the field of plant genetics and his work has been principally with corn and soybeans. He originated three widely grown soybean varieties—Chief, Illini and Viking. In cooperation with the federal government he has also produced the Lincoln soybean, now an outstanding variety of the Midwest.

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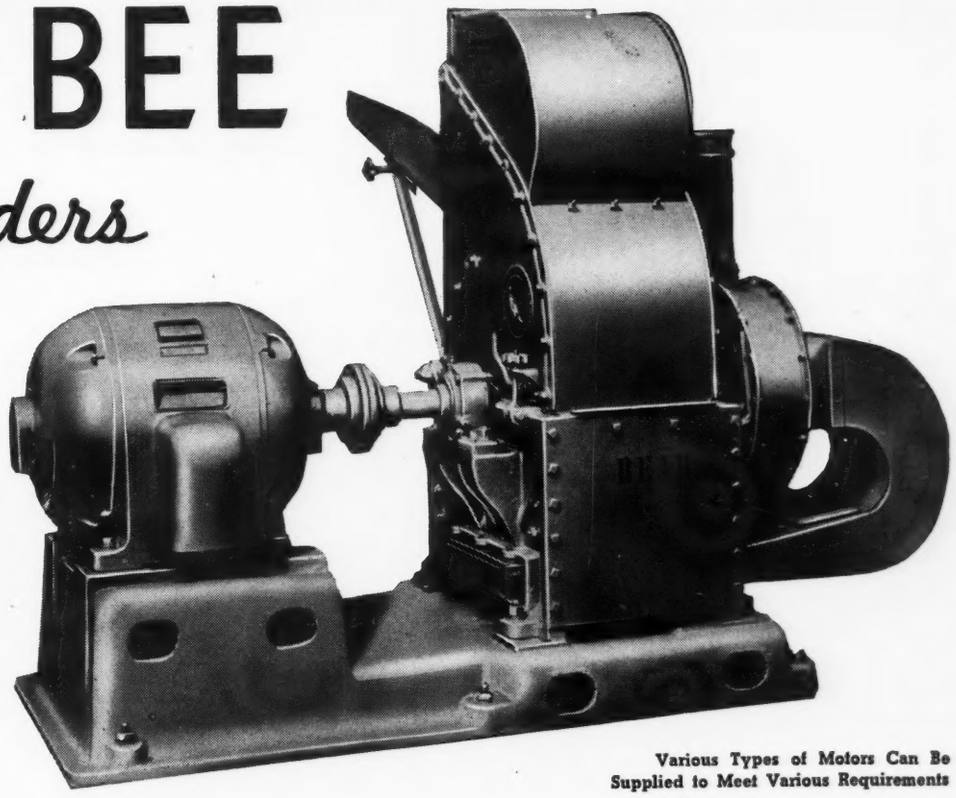
JAY BEE

Grinders



Various Types of Motors Can Be Supplied to Meet Various Requirements

Grind SOY BEAN CAKE with a uniformity that meets your most particular needs.

●

Grind soybean pods, screenings and other materials with a JAY BEE Screenings Grinder.

●

For details about any JAY BEE grinding equipment, stationary or portable grinders, mixers and mill parts write any of the addresses below.

To meet the needs of the soybean industry, many different models and sizes of mills are necessary. JAY BEE Soybean grinders are made in sizes from 5 to any desired horsepower or capacity.

Tough, rugged JAY BEE Mills, like the Model S shown herewith are ready for heavy service . . . lighter mills for quick "stop and go" grinding (Model UX) . . . portable mills to serve farmers and feeders on their home grounds . . . mills for grinding anything grindable are provided by JAY BEE. And ALL give you a maximum of Capacity, Economy of operation, Dependability and continuous service.

JAY BEE Mills are durable and long lasting. Simplicity of hammer and screen arrangement assures evenness of wear . . . more capacity per horsepower . . . greater earnings for you.

J. B. SEDBERRY, INC. FRANKLIN, TENNESSEE

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E. B [illegible] Harrison ..... Cairo, Georgia
O. [illegible] Padgett ..... Sandersville, Ga.
A. F [illegible] Shirk ..... Box 523, Canton, Ohio
Jay [illegible] Sales Co. ..... 220 Broadway, New York 7, N. Y.
Frank [illegible] Sanders ..... P. O. Box 656, Gainesville, Fla.
Bryan [illegible] C. Long ..... 1601 Choctaw St., Baton Rouge, La.
Jay [illegible] Sales Co. ..... Jackson, Tenn.
M. E. Padgett ..... Bennettsville, S. C.
Jay [illegible] of Texas ..... 1904 S. Akard St., Dallas, Texas
W. H. Hust, Jay Bee Co. ..... 1031 N. Humphrey Ave., Oak Park, Ill.
W. E. Berling ..... P. O. Box 6084, Indianapolis, Ind.
Wagner Machine & Mill Supply Co. ..... 1329 Market St., Denver, Colo.

A. E. Thompson Co. ..... 718 Washington Ave. N., Minneapolis, Minn.
Douglas W. Palmer ..... 3808 44th Ave. S. W., Seattle, Wash.
J. C. Hunter Co. ..... 600 16th St., Oakland, Calif.
Western Engineering & Equipment Co. ..... 5699 District Blvd., Los Angeles, Calif.
H. A. McLeod ..... Forest, Mississippi
J. D. Vance ..... P. O. Box 497, Murfreesboro, Tenn.
J. R. Sorrells ..... Dothan, Alabama
R. E. Perkins, Mgr., Jay Bee Sales Co. ..... 1508 S. First St., Louisville, Ky.
Lima Armature Works ..... Lima, Ohio
The Sanders Co. ..... Greenwich, Ohio
C. Y. Wier, Jr. ..... P. O. Box 331, Utica, New York
Irwin A. Sedberry ..... 1428 W. 26th St., Indianapolis, Ind.

GRITS and FLAKES...

FROM THE WORLD OF SOY

Progress in Products, margarine film produced jointly by the American Soybean Association and the National Cotton Council, and released early in the year, had been booked 1,272 times by August 31. Over 230,000 people have seen the film.

* * * *

Bulletin 3208 of Exact Weight Scale Co., Columbus 12, Ohio, describes six new model scales manufactured by the firm. All are in the 75-pound-capacity range.

* * * *

F. A. (Fran) Davis has been appointed meal sales representative of Spencer Kellogg & Sons, Inc., at the Chicago office, 105 W. Adams St., Chicago. He succeeds William LeBlanc who has resigned. Davis joined Spencer Kellogg in February 1947 following his graduation from the University of Buffalo.

* * * *

Soybeans are a leading Marion, Ohio, crop, reports Markets of America in a survey of that city.

* * * *

Kenneth D. Lozier has been appointed advertising manager of the St. Regis Paper Co. He came to St. Regis from the American Can Co. where he had been advertising manager.

* * * *

The story of soybeans with special attention to A. E. Staley Manufacturing Co. operations is told by Darrel Doolen in the article, "American Agriculture's Adopted Child," in the June issue of *Central Manufacturing District Magazine*.

* * * *

"Homemade Boom in Dixie," in June *Colliers Magazine* described the home processing operations of Lee Wilson & Co., Wilson, Ark., and Jim Crain, its manager. Article was by Lester Velie, who calls Crain a "grass-roots entrepreneur with a genius for making men and money work."

* * * *

A. E. Staley Manufacturing Co., Decatur, Ill., will manufacture and distribute mono sodium glutamate, popular food seasoning agent. Staley will use protein from corn in the product, and may also use soybeans.

* * * *

William Robinson Huey, general traffic manager of Bemis Bro. Bag Co., died August 22 at his home in Evanston, Ill., following a long illness. He was 69. Mr. Huey joined Bemis in 1918.

* * * *

C. E. McMichael, widely known food technologist, has joined the fats and oils section of the Votator division of the Girdler, Corp., Louisville, Ky. He will be associated with A. E. Bailey, who heads up the section.

* * * *

Woodson-Tenant Laboratories, Memphis, Tenn., received a "new look" this summer. The exterior and interior have been redecorated. Oil proofing tile has been laid in the oil refining department. Air-conditioning was installed last summer in the offices.

* * * *

L. B. Lovitt, L. B. Lovitt & Co., Memphis, was recently elected president of the Memphis Merchants Exchange Clearing Association for the 16th time.

* * * *

Harold Anderson, Lucas County, Ohio, elevator and grain man, has bought the East Toledo soybean processing plant from Archer-Daniels-Midland Co. A-D-M closed the plant in June. Anderson bought it for grain storage. Processing equipment not involved in the deal is being removed.

* * * *

Monroe Barron, Riechman-Crosby Co., Memphis, Tenn., has been made salesman and will cover southeast Missouri and northeast Arkansas. He succeeds Winston Hoover, Jr., who resigned to become a partner with the Dabney-Alcott Supply Co., Memphis. Mr. Barron has been with the Riechman-Crosby Co. for 2 years in the office.

* * * *

Richard F. Uhlmann, president of the Chicago Board of Trade has announced that the board of directors has elected the following to membership: Robert W. Beaven, Skokie, Ill.; John H. Wagner, Cedar Rapids, Iowa. and Gustav Wedell, of East Asiatic Co., New York City.

* * * *

Recent contestant on "RFD America" NBC radio program was Leroy A. Dantzler, Eutawville, S. C. soybean producer.

SOYBEAN LAB CHANGES

PAUL R. HENSON

Paul R. Henson, coordinator for the work of the U. S. Regional Soybean Laboratory in 12 Southern states since June 1942, has become leader of the miscellaneous legume project of USDA's Division of Forage Crops and Diseases.

Henson was transferred from the Delta Branch Experiment Station at Stoneville, Miss., to Beltsville, Md., in June.

Henson has been succeeded at Stoneville by Dr. E. E. Hartwig, located at the North Carolina Experiment Station, Raleigh, N. C., at the time of his new assignment. Dr. Hartwig has been a member of the Regional Laboratory staff since February 1943, and has been in charge of USDA's soybean investigations in North and South Carolina. He assumed his duties at Stoneville Sept. 1.

Herbert W. Johnson, a graduate of the University of Tennessee, has taken Dr. Hartwig's place at Raleigh.

—s b d—

KANKAKEE PLANT

Operations of the General Mills, Inc., new Chemoil plant at Kankakee, Ill., began in August, Whitney H. Eastman, president of the chemical division, announced.

About 100 people staff the Kankakee installation, which produces fatty acids and fatty acid derivatives from animal, vegetable and marine oils.

Manager of the fatty acid operation is Arthur P. Berry. His technical director is Hugh A. Hamilton.

Guy W. LaLone, former supervisor of refineries at the General Mills chemical division's soybean processing plant at Belmond, Iowa, has been transferred to Kankakee as production superintendent. Henry J. Shoder has been named office manager.

A-D-M EXPANDING

Archer-Daniels-Midland Co., Minneapolis expects to complete a new linseed and soybean extraction plant in southeast Minneapolis this fall.

The five-story building is 108x130 feet of reinforced concrete construction with a brick exterior. Also under construction are 12 concrete storage tanks for storing meal prior to shipment and a new boiler plant.

The extraction plant will have a processing capacity of 500 tons of flaxseed and soybeans a day when in full production. It is a part of the A-D-M 15 million dollar expansion program for 1947-48.

—s b d—

TUNICA MILL SALE

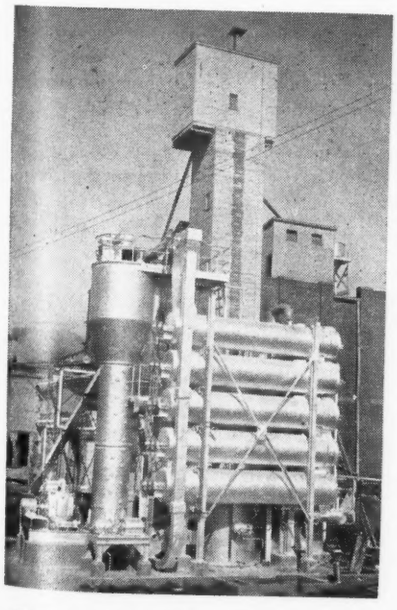
The Planters Oil Mill, Tunica, Miss., has sold one-fourth of its interest for $250,000 to Roy Flowers, Tunica planter who operates 13,000 acres of land for cottonseed and soybeans.

Ellis Woolfolk retires as president, and will be succeeded by M. Gerald Burrow, president of the Planters Bank of Tunica.

The mill expects to crush 60,000 tons of cottonseed this fall. In addition it has within the last year added a $150,000 soybean crushing mill and is expecting to crush about 200,000 bushels of soybeans.

—s b d—

MUSCATINE, IOWA, PLANT



Pictured here is the new continuous process, solvent extraction soybean processing unit recently installed at the plant of the Muscatine Processing Corp., Muscatine, Iowa. The new unit was manufactured and installed by the V. D. Anderson Co., Cleveland, Ohio. The unit has a rated capacity of 70 tons of soybeans per day. The Muscatine Processing Corp. plant has been in operation since 1943. Officials of the company are S. G. Stein, president and treasurer; G. A. Kent, vice president and secretary; M. C. Larson, manager; Reginald Hale, plant superintendent; Vernon Walters, office manager.

A RECOGNIZED SOURCE FOR OVER 20 YEARS

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Grow Soybeans!
for BIGGER PROFITS
Feed Soybean Oil Meal
SUNFLOWER

THE KANSAS Soya PRODUCTS CO., Inc.
EMPORIA, KANSAS — KANSAS CITY, KANSAS

Edward O. Paschke, for 14 years Chicago sales manager of Archer-Daniels-Mildand Co., has been named sales manager of the firm's edible soya products division at Minneapolis. Joseph W. Gorman, formerly in charge of local soybean and linseed meal sales, will now manage all sales in Chicago for A-D-M.

* * * *

Two employees of Dannen Mills, Inc., St. Joseph, Mo., were fatally burned and two others were injured in July when a tank of the distilling unit of the soybean plant exploded. A. J. Monach, general plant superintendent, and S. J. Salanski, plant foreman, were killed. Paul Lawnick and Wallace Bozarth were severely burned.

* * * *

An eight-page, two-color catalog describing the complete line of Eriez permanent non-electric magnetic separators is now available from Eriez Manufacturing Co., 300 East 12th St., Erie, Pa. Write for *Catalog No. 12.*

* * * *

Griffin & Co., Inc., Louisville, Ky., have been licensed to build and market the self-cleaning filtering dust collector and improvements developed by H. J. Hersey, Jr., Empire State Bldg., New York.

* * * *

An award for "outstanding service to agriculture," was presented to Frank Bill, agricultural editor of the Bloomington, Ill., *Daily Pantagraph*, at the McLean County soil conservation field day September 1. Bill, regarded as one of the leading agricultural editors in the U. S., has been with the *Pantagraph* 25 years.

* * * *

"Plus Values for Success," describes the feed and soybean processing enterprise of J. Roach Sons, Plainfield, Iowa, in the July *American Feed and Grain Dealer.* Firm was founded by John Roach, an Irish immigrant, before 1900. Howard Roach, former president of the American Soybean Association, is a member.

* * * *

W. R. Boyer and E. E. Rhodes were promoted to comptroller and assistant treasurer respectively of A. E. Staley Manufacturing Co., Decatur, Ill., in August. The former comptroller, R. C. Sherer, continues as secretary, director and member of the executive committee.

* * * *

In addition to handling General Mills' chemical division products in the Cincinnati territory, Amsco Products Co. has now been assigned the territory of Louisville, Ky., according to Sewall D. Andrews, vice president. Amsco will handle General Mills' complete line of vegetable and animal and marine fats as well as organic chemical derivatives for the technical trade.

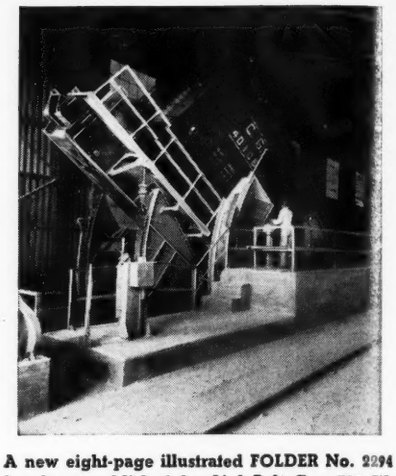
* * * *

Formation of an Archer-Daniels-Midland Co. "Old Timers Club," composed of employes who have completed 25 or more years of service, is announced by Vice President W. D. Hoofe. Some 121 employes are eligible for membership.

* * * *

Lyle York, Buffalo district manager for A. E. Staley Manufacturing Co.'s industrial sales department, has been given charge also of the firm's Michigan and Ohio territories. He succeeds John Harris, who has resigned to open his own brokerage firm in Columbus, Ohio.

MECHANICAL UNLOADER



A new eight-page illustrated FOLDER No. 2294 has been published by Link-Belt Co., 300 W. Pershing Road, Chicago 9, Ill., on the Link-Belt grain car unloader for rapid mechanical unloading of grain or soybeans from boxcars. The unloader, shown above, unloads a boxcar in 4½ minutes.

—s b d—

BORDEN'S IOWA PLANT

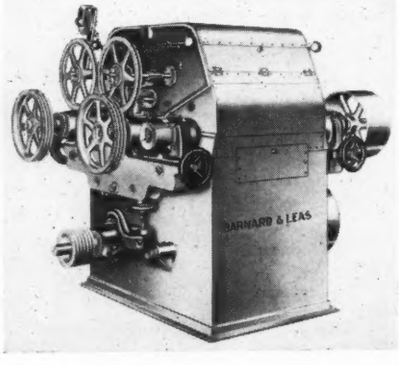
To broaden its activities in the soybean industry, the Borden Co. will modernize its Waterloo, Iowa, oil and meal mill at an estimated cost of $1,250,000, Theodore G. Montague, president, has announced.

The improvement program provides for the erection of a five-story solvent extraction tower and connecting bridges to existing elevators and processing buildings. Under a contract awarded to Vernon E. Alden, Chicago engineering firm, the work is to be completed by October, 1949.

The elevators, operated by Borden's Soy Processing Co., have a soybean capacity of more than 1 million bushels and the tower is expected to produce nearly 200 tons of oil and meal per day.

BARNARD & LEAS

MODEL "47" CEDAR RAPIDS DOUBLE ROLLER MILL



Newly designed throughout, this new all metal Roller Mill is available with a wide range of optional construction features. Self-aligning roller bearings or collar oiling type ball and socket removable babbitt bearings are offered with or without tunnel shaft and chain drive.

NEWLY DESIGNED TWO PAIR HIGH OR THREE PAIR HIGH ROLLER MILLS ARE NOW AVAILABLE IN A WIDE RANGE OF SIZES AND CONSTRUCTIONS.

Write, wire, or phone us today for further details.

Keep Barnard & Leas name foremost in your mind for dollars saved in operating and maintenance costs.

Since 1854 Builders of Quality Mill Machinery and Supplies

BARNARD & LEAS MFG. CO., INC., CEDAR RAPIDS, IOWA, USA

GET AN "EAR FULL" OF THIS!

When you order from Burrows you are dealing directly with the

Central

SOURCE OF GRAIN AND SEED TESTING AND HANDLING EQUIPMENT AND SUPPLIES

Yes sir. Equipment and supplies that measure right up to the most rigid official requirements. It's a complete source, too, from bag needles on up to heavy duty equipment. More than 500 tested and approved items including:

- Moisture Testers
- Dockage Scales
- Elevator Cups
- Grain Probes
- Wt. Per Bu. Testers
- Seed Treaters
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. . . and what have you.

Check your needs now. Buy from Burrows. Get set plenty right for the bumper Fall harvest.

If you have not received a copy of the New Burrows Buyer's Guide let us know and we'll send you one.

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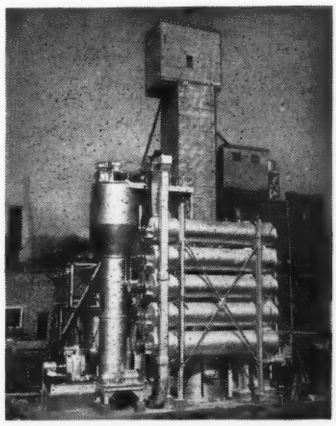

Our new solvent extraction equipment.

MUSCATINE PROCESSING CORP.

Processors of

"PORT CITY"

Soybean Oil Meal

S. G. Stein, President G. A. Kent, Vice President

MUSCATINE, IOWA

Specify

MENTE BURLAP & COTTON BAGS

New and Used — Printed and Plain

FOR YOUR

SOY BEANS * GRAIN * PEAS!

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GOOD SERVICE AND GOOD BAGS!

MENTE & CO., INC.

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Dimensions and Weight

Length, overall .....32"
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Shipping Wt., crated 200 lbs. (approx.)

OK BAGGING SCALES

For all kinds of material that needs bagging—flour, feed, soybean meal, etc. Semi-automatic and always accurate. No further lifting of bags on and off scales. When the product is bagged, it is also weighed.

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CONSTRUCTION and MACHINERY CO.

CEDAR RAPIDS, IOWA.

WASHINGTON Digest

Send Whole Beans Abroad?

You can look for moves from Washington to keep the price of soybeans from sagging to price support level this season.

There is strong support in most government agencies to export a considerable volume of soybeans as beans this marketing year. One purpose is to bolster the price to growers as a support measure.

Another is to partially fill the enormous demand for oilseeds from European countries. A third is to give U. S. producers a chance to get a toehold in the European market before other lines of supply are firmly established.

So far there has been no official green light flashed for the export of soybean seed. But the idea has been discussed by the government agencies most concerned.

With a crop some 25 million bushels bigger than last year about ready for harvest, USDA feels soybeans can not only be spared for export, but that seed exports may be needed to keep prices from getting out of line.

The Army wants both oilseeds and oilseed meal for occupied Germany to help build back the German livestock industry.

The Economic Cooperation Administration (ECA) is also favorable. European countries are demanding more and more raw materials to keep their own industries going, to provide work locally, and to spread their dollars farther.

In spite of the short supply of dollars, the demand for raw materials is so strong that orders for soybeans would pour in if export controls were taken off now.

There is little prospect that export controls on fats and oils will be removed this year. This might come next year if the Republicans win the election, but this isn't certain.

Expect Price Readjustment

It's strongly felt in Washington that the reconversion period for agriculture is now under way, and its beginning can be dated from the July 10 crop report.

Grains are leading the way to a lower price level this fall. Livestock prices are due to take a step down a year from this fall. Another big crop of vegetable oil seeds next year would lower prices a notch farther and make price floors a real factor in the market.

Big exports of fats and oils this season will keep prices from dropping drastically. Exports are pretty sure to be larger than 1947-48. The demand is strong and the supply of vegetable oils is about 15 percent bigger.

There may be a slight drop in lard output —estimated now at about 50 million pounds below last season. This is more than offset by the increase in vegetable oils. The tentative estimate on lard may go up.

The price of edible oils this season is expected to run 15 to 20 percent below the 1947 average. This assumes an average price for soybean oil of about 18 to 19 cents a pound, compared with a 23.3 cent average for 1947.

C. G. CARTER, BROKER

LD-303

Memphis 3, Tennessee

SOYBEAN AND COTTONSEED PRODUCTS

ALSO BROKERS IN
SOYBEAN OIL MEAL AND COTTONSEED MEAL FUTURES

Members of
Memphis Merchants Exchange

Memphis Merchants Exchange Clearing Association

By PORTER M. HEDGE

Washington Correspondent for
The Soybean Digest

Oilseed meal prices will be down sharply this fall. Price supports next year will be lower. Copra production is coming back.

Typhoon damage won't be a factor in Philippine copra production for the balance of this year and output is expected to increase. Exports from the Dutch and British Indies aren't back to prewar, but production is now beginning to increase.

Everything in the current outlook points to a major adjustment in fats and oils prices during the next year and a half. But it doesn't mean depression for the soybean industry.

The world is still short of fats and oils, and will be for some years to come. Exports will continue large as long as funds are appropriated for European recovery, and especially if U. S. producers can establish this country as a source of supply for oilseeds.

Meal to Go Lower

Soybean and cottonseed meal prices of around $50 a ton are expected by USDA officials when the big crops come in this fall.

Exports of oilseed meals will be much higher than 1947-48—probably more than 300,000 tons. But big exports won't prevent a sharp drop in prices, as it's seen from here.

The tentative estimate is for a surplus of oil meals over domestic needs of about 920,000 tons. This represents approximately the increase in production estimated for this year over last.

The estimate allows for about 2 million animal units on farms during 1949, with nearly all of the increase in hogs and poultry. It allows for the same rate of feeding per animal unit as last year, which may be high in view of the big corn supply.

It allows for export of several million bushels of soybeans and flaxseed. It doesn't take into account a possible increase in the use of cottonseed meal as fertilizer.

Any estimate on exports of meal the coming season has to be based mainly on guesswork now. But this will clear up this month when European countries submit new estimates of their requirements at the ECA conference in Paris.

USDA has ruled against supporting the price of linseed meal in the event the market drops below a price reflecting support for flaxseed.

The decision came on a proposal by the industry to subsidize the price of linseed meal at approximately $65 a ton.

This is the price crushers figure they need to come out on the seed, with oil at the cur-

rent level and the support at $6 a bushel, Minneapolis basis.

One proposal was for CCC to take over the seed and turn it back to processors at a price which would enable them to come out on the meal.

Another was to let linseed meal seek its own price level, then pay processors 90 percent of the difference between the market price and $65 a ton on a crop year basis.

USDA ruled in effect that it would guarantee the price of flaxseed and stand by its processor contracts to take over linseed oil if necessary, but would not support the price of the meal.

Flaxseed is a special case, since it is supported well above parity and the price of every bushel marketed is guaranteed by the government.

Soybean Outlook On soybeans there are no comparable processor contracts. Soybeans are supported only at 90 percent of parity and only by government loan and purchase agreement. If the supply were large enough, the market price could drop below this level.

The support price for soybeans grown next year is pretty apt to fall within a range of 60 to 75 percent of parity. If the parity index remains at approximately the same level as now, this would mean a price floor from $1.45 to $1.80 a bushel.

The new farm act goes into effect on soybeans and other non-basic crops next year. It permits the Secretary of Agriculture to fix the support for soybeans anywhere between 60 percent of parity and the 1948 level.

Farm price supports are now coming under fire. The pressure is on to lower them next year so as to protect the basic legislation.

The level of support for 1949 soybeans will be decided later, but it's pretty sure to be on the low side of the permissible range.

The new farm act keeps 90 percent of parity price floors next year for the basic crops, including corn, wheat, cotton and peanuts. There's a drive on now to make the lower floors in the new act apply to these crops next year too.

Wheat, cotton and peanuts are especially vulnerable to this campaign, since the floors guaranteed for them next year are incentive as well as support prices.

House farm leaders are probably strong enough to prevent a switch to lower price floors on the basic crops produced next year, since this would be changing the rules after the game had started.

No Lending Agreements Commodity Credit Corporation "lending agency agreements" won't be available to soybean processors this season.

These were agreements under which CCC guaranteed bank loans to processors in return for assurance the latter would pay support price for soybeans.

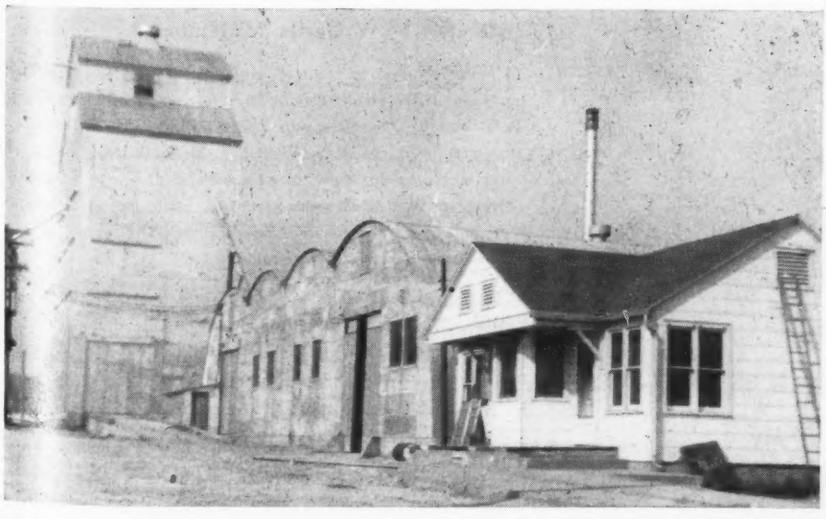
The question of continuing the agreements came up at a recent CCC board meeting, and they were turned down for at least this year. Since then CCC has been asked to reconsider, but it wasn't known at presstime what the decision would be.

1948-Crop Support The official support price for 1948-crop soybeans is $2.18 a bushel. This is the rate for green and yellow beans grading No. 2 and containing not more than 14 percent moisture.

The discount for black, brown and mixed varieties is 20 cents a bushel.

Soybeans will be supported by the usual loans and by purchase agreements, and the program will be handled about the same as in other years.

Processing Plant at Ipava, Ill.



Above is the soybean processing plant of the Ipava Farmers Processing Co., Ipava, Ill., housed in a 100-foot-square Quonset-type building. Many of the firm's beans are also stored in this type building. Plant went into operation last September. It produces between 35 and 40 tons of soybean meal daily from two screw presses. Plant is owned by Ipava Farmers Elevator Co. that has elevators at Ipava, Table Grove, Cuba and New Philadelphia and a modern feed store at Havana. C. O. Snedeker is the firm's general manager. F. P. Brown is plant manager.

Market Street

We invite the readers of THE SOYBEAN DIGEST to use "MARKET STREET" for their classified advertising. If you have processing machinery, laboratory equipment, soybean seed, or other items of interest to the industry, advertise them here.

Rate: 5c per word per issue.
Minimum insertion $1.00.

EXPERIENCED field warehouse solicitors. Address Cleveland Storage Co., Inc., Guardian Bldg., Cleveland 14, Ohio.

FOR SALE—Anderson Expellers all models, as is or rebuilt for specific materials. Pittock & Associates, Moylan, Penna.

OUR 24 x 24½ FLAKING Rolls with water cooled rolls and 30 ton capacity are ideal for soybean flaking. Get the facts. Write Ben M. Selby, 925 Montrose Ave., Chicago 13, Ill.

FOR SALE—Soybean Flaking Machine manufacturing rights. This machine originally designed for large company who have discontinued Soy Bean activities. Engineering and patterns completed for this machine. This machine has a 24 hour capacity of 100 tons with a proved design. Available to interested party very reasonable. Contact us for further information. Box HX, SOYBEAN DIGEST, Hudson, Iowa.

SITUATIONS VACANT — One chief Chemical Engineer (required July 1949) and two fully qualified and experienced assistants (required January 1950) each to run one shift of a 150-tons-a-day Allis-Chalmers soybean solvent extraction plant in England. Previous experience in solvent plant essential. Good salaries paid to first class men. Write full particulars to GT, care Soybean Digest, Hudson, Iowa.

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Jobbers & Processors Soybean Flakes, Grits and Meal. Wire or airmail your offers with samples of defatted soy products.
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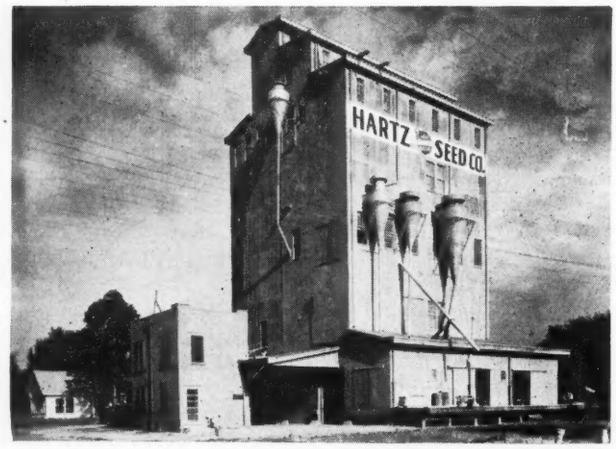
NEW STEEL STORAGE TANKS IN STOCK
17—10,000, 11,500, 20,000, 25,000 Gal. Cap. New Welded Horizontal Cylindrical.
8—42,000 and 126,000 Gal. and 410,000 Gal. Vertical Bolted.
L. M. STANHOPE Rosemont, Penna.

The Pioneers of Soybeans
IN THE SOUTH



OGDEN **MAMLOXI**
RALSOY **VOLSTATE**
ARKSOY **WHITE BILOXI**
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In The MARKETS

FORECASTS OF BIG CROPS FORCE SOYBEANS LOWER

More ground was lost in the soybean futures market in August. There was a sharp break following the government's report forecasting a record soybean crop and a cotton crop much larger than expected.

November futures in Chicago lost 23c during August compared with 69c in July.

The government estimates of 1948 crops together with breaks in lard and soybean futures also contributed to weakness in oil meal and oil markets. But old crop supplies in these commodities were tight. Spot meal rallied during the last week of August to make a net gain of $5 for the month. Cash soybean oil also displayed strength and gained 2½c during August.

Demand for both meal and oil was largely limited to nearby shipment to fill immediate needs. Buyers banked on the prospective big crops to meet later demands.

November No. 2 soybeans in Chicago opened at $2.68 for the month, closing at $2.45, which was also the August low. High was $2.76 Aug. 9.

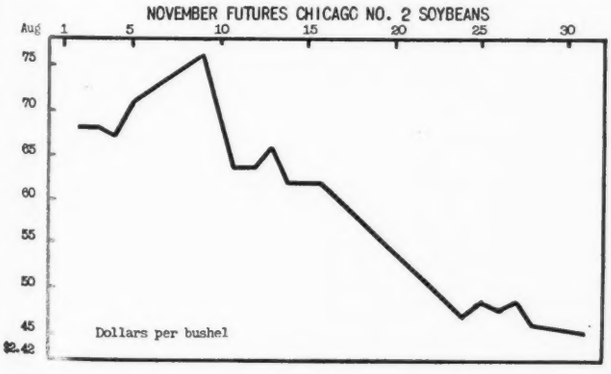
The cash soybean market was very quiet with only an occasional car offered. Processors were not aggressive buyers.

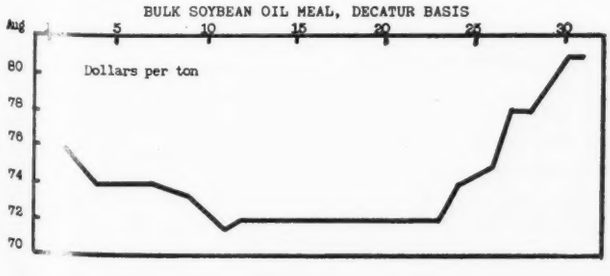
Government support price for No. 2 1948-crop soybeans was announced at $2.18.

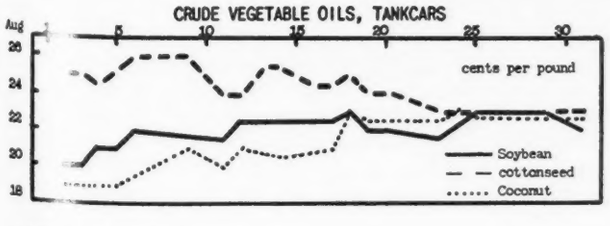
Bulk soybean oil meal, Decatur basis, opened at $76 for August, closing at $81, the month's high. Low was $71.50 Aug. 11.

Meal was hard to move earlier in the month. But activity picked up the last 10 days, with gains up to $9 for spot soybean oil meal.

There was growing tightness in supplies since many mills closed down to get ready for the new crop. Cautious buying had left







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many users with small inventories. There was a scramble for remaining supplies of old crop meal.

Crude soybean oil, in tankcars f.o.b. Decatur opened at 20c, the month's low, and closed at 22c. The high was 23c, reached Aug. 18 and Aug. 25-28.

Scarcity of offerings for immediate shipment contributed to strength in soybean oil. Refinery demand was fairly good much of the month.

The price gap between the various vegetable oils closed late in August as cottonseed lost while soybean oil gained ground.

NEW YORK SOYBEAN OIL FUTURES AUGUST 31*

Close: Sept. 20, 75N, Oct. 18.25A, Dec. through Jly 17.75A. No sales N-nominal A-asked.

MEMPHIS SOYBEAN OIL MEAL FUTURES CLOSING AUGUST 31*

Oct. flat 59.00, Dec. flat 55.00, Jan. 53.50-53.55, Mar. flat 54.00, May 53.75-54.00, sales 3,000 tons.

*Reported by Chicago Journal of Commerce.

● SOYBEAN STOCKS ON FARMS. Stocks of soybeans on farms July 1, estimated at 4¼ million bushels, are the lowest for the date in the 6 years of record. On July 1 last year, farm stocks amounted to 6.4 million bushels, which was the previous low mark for the date.

Disappearance from farms was heavy for the period April 1 to July 1, totaling 28.4 million bushels, compared to only 19.1 million bushels for the period a year ago. Planting of soybeans was practicaly completed and most acreage was "up to a good stand" before July 1 therefore it was not necessary for farmers to hold stocks any longer for seed purposes. Last year much of the acreage was not planted until late June and early July, and on July 1 farmers were holding some stocks for seeding and possible reseeding.

About 85 percent of the farm stocks on July 1 were concentrated in the North Central states. Illinois alone had almost a million bushels. Iowa had over ¾ million bushels and Indiana had about½ million.

SOYBEAN STOCKS ON FARMS JULY 1
(Thousand Bushel)

	1947	1948		1947	1948
N. Y.	13	11	Md.	29	9
N. J.	21	19	Va.	39	78
Pa.	34	20	W. Va.	1	1
Ohio	813	439	N. C.	114	117
Ind.	783	564	S. C.	16	17
Ill.	1,950	978	Ga.	2	3
Mich.	77	26	Ky.	86	143
Wis.	41	17	Tenn.	12	23
Minn.	427	276	Ala.	14	7
Iowa	1,068	789	Miss.	42	13
Mo.	574	495	Ark.	82	51
N. Dak.	7	3	La.	12	14
S. Dak.	11	32	Okla.	2	0
Nebr.	10	14	Tex.		
Kans.	65	47			
Del.	44	46	U. S.	6,389	4,252

● SOYBEAN CRUSHING. With smaller supplies available for the 1947-48 season disappearance of soybeans in the first 9 months of the season was the smallest since 1943-44 and totaled 155 million bushels, reports U. S. Department of Agriculture. This is 10 million bushels below the record high for the same months last season.

Disappearance in the April-June quarter totaled 56.5 million bushels compared with 53.2 million in the January-March quarter and 60.7 million in the April-June 1947 quarter. Crushing of soybeans for oil, as reported by the Bureau of the Census, totaled almost 128 million bushels for the period October 1947 through June 1948. With the exception of last year when crushings totaled 135.5 million bushels this is the largest of record for these months. Slightly over 40 million bushels were crushed in the April-June quarter compared with 46 million in the January-March quarter and 44 million in the April-June 1947 quarter.

Crushings of soybeans for flour and grits have been at a record rate this season, reflecting the urgent export demand and totaled almost 13 million bushels. This compares with about 5½ million in the same months last year and 6 million in the same months of 1945-46. Exports of soy flour in terms of soybeans totaled 11.9

million bushels October through June this season compared with 2.5 million the same months last season.

Exports of soybeans as grain have also been heavy totaling almost 3 million bushels for the first three quarters of the season. This compares with 3.7 million exported in the same months last year and 2.7 million 2 years ago.

Disappearance of soybeans for feed totaled 8.9 million bushels the first 9 months of this season, slightly more than the 8.8. million used for feed in the same months of 1946-47.

Average disappearance for feed in the four seasons 1942-45 totaled about 20 million bushels for the first 9 months.

• SOYBEAN INSPECTIONS. Inspected receipts of soybeans in June were considerably larger than for the preceding month and above the June average for the crop years 1941-45, according to reports to the Department of Agriculture. June inspections totaled 3,769 cars compared with 2,919 in May and the June average of 3,036 cars. Inspected receipts for October through June this season were 76,776 cars compared with 80,469 cars for the same period last year.

The quality of the soybeans inspected continued good, 90 percent grading No. 2 or better in June compared with 87 percent in May and 88 percent in April. Eighty-seven percent graded No. 2 or better for October-June this season compared with 70 percent last year.

Inspections of soybeans in June included the equivalent of 39 cars inspected as cargo lots and truck receipts equal to about 48 cars.

Inspected receipts of soybeans in July dropped sharply below the total for the preceding month and considerably under the July average for the crop years 1941-45 but were about the same as for July last season, according to reports to the Department of Agriculture. July inspections totaled 1,783 cars compared with 3,769 cars in June, 2,769 cars the 5-year July average and 1,728 cars for July 1947. Inspected receipts for October through July this season were 78,559 cars compared with 82,197 cars for the same period last year.

The quality of the soybeans continued good, 89 percent grading No. 2 or better in July compared with 90 percent in June. Eighty-seven percent graded No. 2 or better for October-July this season compared with 70 percent a year ago.

Inspections of soybeans in July included the equivalent of 9 cars inspected as cargo lots and truck receipts equal to about 22 cars.

• SOYBEAN GLUE IN PLYWOOD. Consumption of soybean glue by the plywood industry in May was 2,306,000 lbs. compared with 2,375,000 lbs. in April; and 2,226,000 lbs. in May of 1947, reports Bureau of the Census.

Consumption of phenolic resin glue was 3,057,000 lbs. in May compared with 2,805,000 lbs. in May 1947. Casein glue consumed by the plywood industry in May was 399,000 lbs. compared with 313,000 lbs. in May 1947.

Total glue consumption in May was 6,196,000 lbs.; in April

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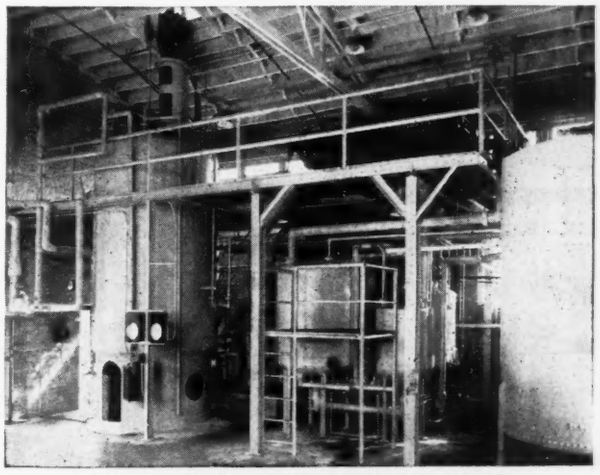

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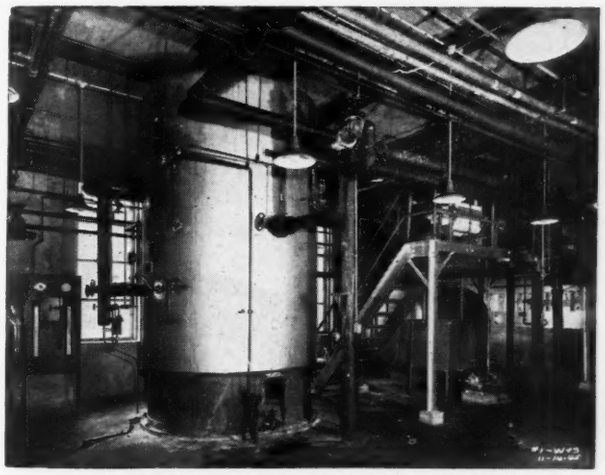

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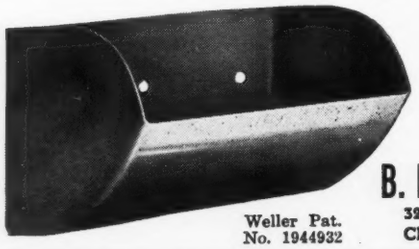

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7,068,000 lbs.; in May 1947 5,568,000 lbs.

Total soybean glue stocks May 31 were 1,317,000 lbs.; April 30 1,316,000; April 30, 1947 1,226,000 lbs.

Softwood plywood production during May, estimated at 150,717,000 square feet, was the lowest for the year; but was 6 percent higher than the May 1947 total.

Consumption of soybean glue in June was 2,509,000 lbs. compared with 2,147,000 lbs. in June 1947. Total glue consumption in June was 6,037,000 lbs. compared with 5,460,000 lbs. in June 1947.

Soybean glue stocks June 30 totaled 1,531,000 lbs. compared with 1,273,000 lbs. the same date a year ago. Total glue stocks of all types totaled 3,967,000 lbs. June 30 compared with 3,300,000 lbs. June 30, 1947.

• COMMERCIAL GRAIN STOCK REPORTS. Production and Marketing Administration's commercial grain stock reports for August.

	Aug. 2	Aug. 9	Aug. 16	Aug. 23
Atlantic Coast	12	9	8	7
Northwestern and upper lake	50	0	22	9
Lower lake	409	388	306	141
East central	53	47	27	7
West central, southwestern & western	269	337	229	165
Total current week	793	781	592	329
Total year ago	628	468	483	522

• STANDARD SHORTENING SHIPMENTS. Reported by members of Institute of Shortening and Edible Oils, Inc., in pounds.

August 7	4,808,301
August 14	4,815,008
August 21	4,886,174
August 28	5,318,305

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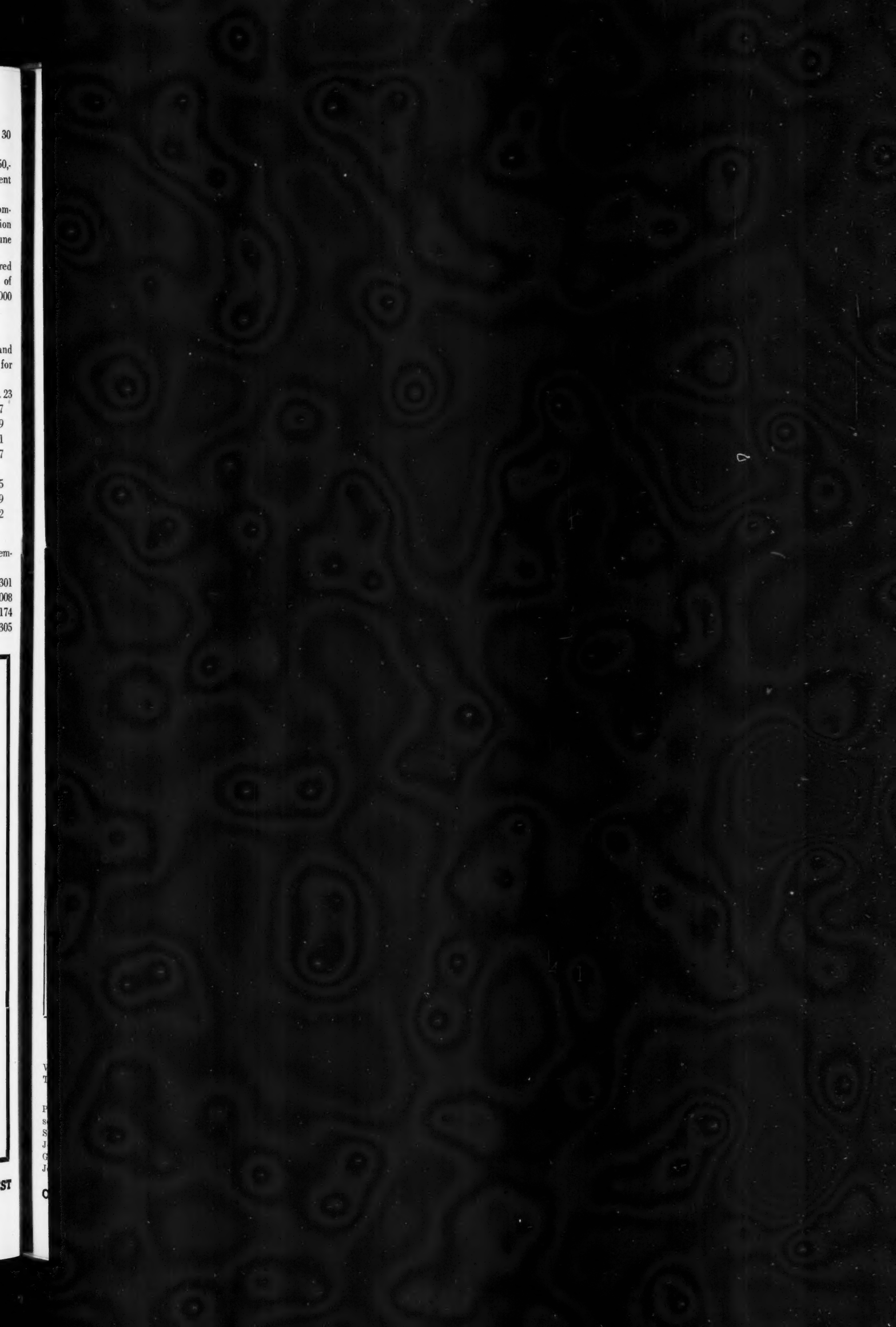

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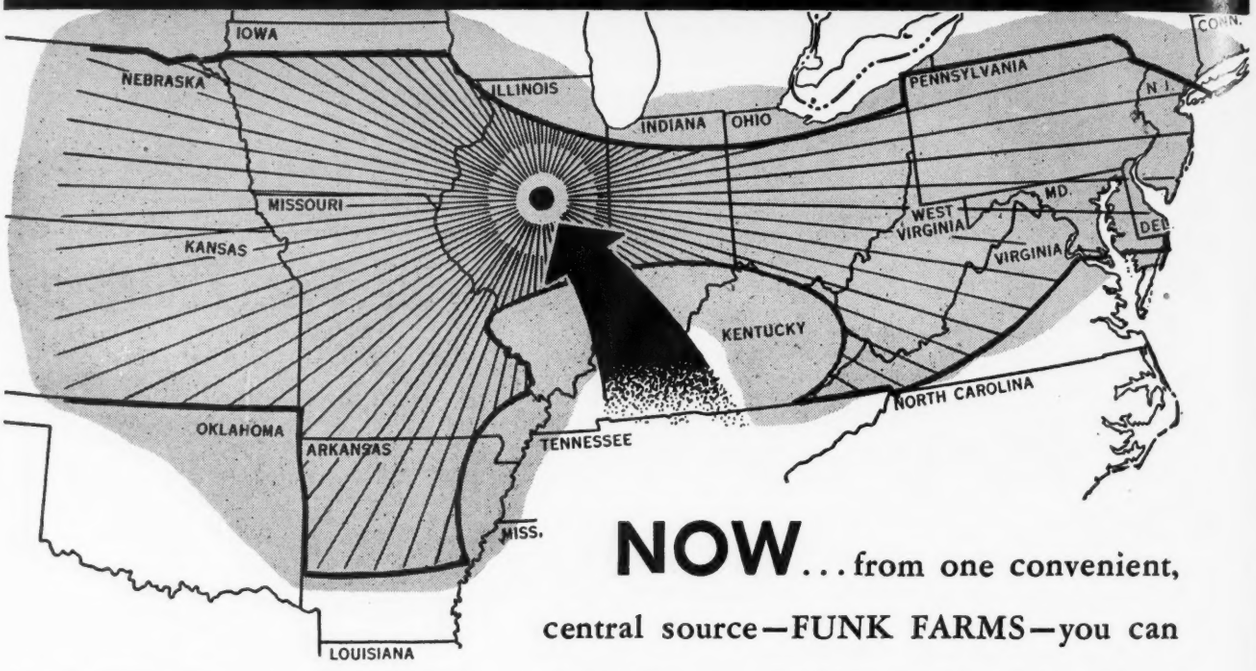

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